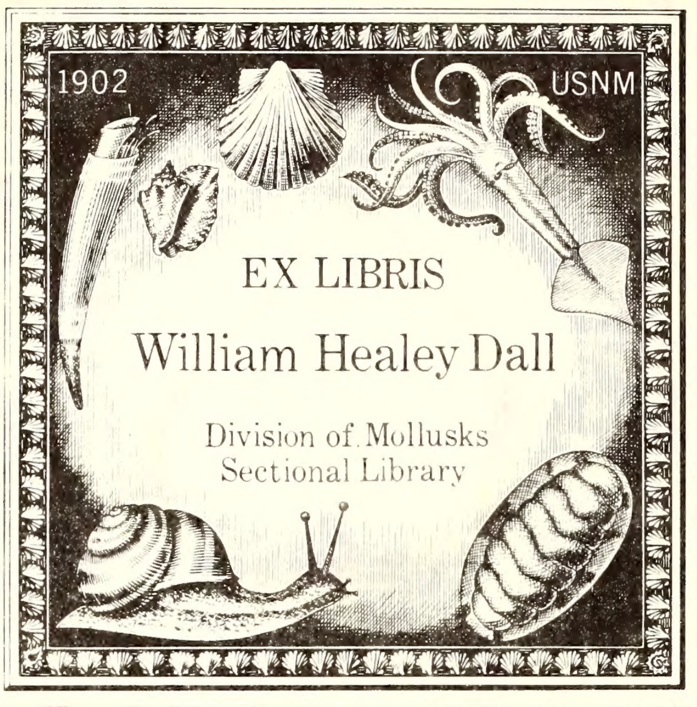

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MINUTES 145

JAN-FEB 1955

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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SOME PHYLLONOTUS OF THE GULF OF CALIFORNIA

by

Jean and Crawford Cate

(Read Oct. 4, 1954, C.C.S.C.)

During the past year we have, as beginning conchologists, attended a class in general shell study, sponsored and instructed by Miss Ruth Coats, our president. The privilege of being members of this class has enabled us to better understand and recognize identifying characteristics of shells in general. In this paper we are attempting to apply this knowledge to a group of shells we are fortunate enough to have access to, and with which we are most familiar and feel able to discuss with a reasonable degree of authority. This authority might well be challenged, but from our standpoint, is based soley upon our own personal observations while collecting and seeing some of these shells in their natural environment. No doubt there will be additions and criticisms that will enter your minds, and we will welcome any helpful suggestions that would contribute to this work.

A great amount of the success of this class has been made possible by the generous contribution by Rose and John Burch of their home as a classroom and their fine shell collection for comparative study. For this ideal class setting we wish to express our thanks. We are fortunate indeed to have had the combination of Miss Coats and Mr. and Mrs. Burch as a basis for the beginning of our conchological study.

To us, there are few Muricidae of the world that are more attractive, both in form and color, than those found in our nearby Sea of Cortez. They are of such wide variety, large and small, of many colors, and are found in all kinds of locations from tide flat to deep water. They all flourish, living as they do in a world rich in food source with so many varieties of clams and other dwellers of the sand and mud bottom. We have seen these shells both in Santa Inez Bay, approximately twenty miles south of Mulege, where we made our headquarters on our latest field trip.

We have made many observations of the eating habits of both the pink and black Phyllonotus varieties. At Santa Inez, we saw Phyllonotus erythrostoma feeding on dead fish in seven fathoms of water, while at El Coyote, we saw them feeding on clams in water from tide-flat to varying depths of crystal-clear water that must have been anywhere from twenty-five to forty feet deep. It may be deduced that the depth range of clam-life attractive to these mollusks is limited, and those Muricidae found feeding beyond that point must of necessity enjoy and thrive on a different fare.

Those mollusks we have seen feeding on clams were in such a position as to have the muscular foot clamped across the valves of the hapless clam, pulling and exerting what must have been a tireless pressure for the Murex, but which to the eventually becomes too much to resist. John Steinbeck has noted from controlled observation that it took a certain Murex 72 hours to subdue his quarry. This opening pressure is exerted, without relinquishment, until the bivalve through sheer exhaustion slowly relaxes its adductor muscles, and the instant the valves begin to open, the Murex commences its entrance to the shell. Once this starts, it isn't long until the meal is under way. Now, whether this 72-hour observation mentioned above is an average time employed in the procedure of opening a clam, I cannot say, but it was interesting to know of this measure of time.

The question of how the Murex gets hold of the clam may be understood when we tell you of a small Phyllonotus nigritus we picked up, on a rock-and-sand tide flat, three-fourths buried in this element. On lifting this animal from the wet sand, we found that its foot and mouth parts had been dug down deeply, extended perhaps six

or eight inches in what certainly must have been an effort to pull out a clam. We are sorry we did not dig down to ascertain for sure just what this Murex had in mind. We might add that we saw countless numbers of these Phyllonotus nigritus living in this particular rock-and-sand habitat. Now, whether or not we missed seeing any large specimens we do not know, but of over a hundred and twenty-five inspected or collected, the largest we found was not over two and a half inches at the largest diameter of its body whorl, and not over three inches in length. This was at San Felipe, Baja California, and this observation led us to believe that we might be seeing this shell at a point near the northern extent of its range. We would like to note that we have seen Phyllonotus nigritus full two to three times as large as these which were taken at Cholla Bay, Sonora, Mexico; which is a geographical point just opposite San Felipe, and enjoying approximately the same latitude. Now, either one of two possibilities seems to exist; either we found ourselves at San Felipe in a group of immature Phyllonotus nigritus, or we found these shells in a varying isothermic range due to the effect of the cooling waters of the Colorado River, which enters the Gulf of California just north of San Felipe. May we add here that this was our first full-fledged shell collecting experience, and was on December 27, 1952.

We found Phyllonotus erythrostoma Swainson to be the most abundant of the Muricidae of the Gulf of California. W also found that those shells taken in deeper water, seven to eight fathoms, were almost totally free of foreign growths such as barnacles, worm tubes, and lime; the only cleaning these shells required was a four-hour dip in a thirty percent Purex bath. Those shells found in shallow water almost invariably were heavily encrusted with lime and other foreign substance. We made no attempt to take any of these shallow-water pink Murex because of the finer specimens we were able to trap in the deeper water.

We also found that those shells found nearer the tide-flats in shallow water possessed the deeper shades of rose in the apertures, while those trapped in the deeper water possessed the more delicate shades of pink. It is true, *some* of the rather deep pink came from deep water, but as a general rule, the shallower the water, the darker the aperture.

We observed Phyllonotus erythrostoma and Phyllonotus nigritus to be extremely voracious feeders, and because of their greater numbers in deep water, they must move about freely, and of necessity, range widely to survive. In comparison to these, the shells living and feeding in shallow water seem to move about very little, and this sluggishness may account for their greater encrustation of lime and foreign substance. When a shell did move about, one could see the straight or winding path left in the wake as the animal moved from one spot to another. The greatest length of this path did not seem to exceed more than four to five feet. It is our amateur opinion that travel in shallow water is perhaps restricted and limited.

Their food, too, may vary to some extent. It would seem likely that those Muricidae living in deep water might do more scavenging, living not only on clams, but being quick to swarm over dead fish and other discarded animal life that has fallen to the bottom. One final observation was that these Murex, when finished devouring the soft contents of a clam, would invariably fall back with the pink aperture exposed and the operculum drawn in tightly. The shells seemed to rest contentedly in this position, with the completely opened valves of the clam bared and empty nearby.

These Muricidae are not without their value to mankind, both as a food and from a commercial potential. The natives, from the earliest times, have considered this animal as one of their staple foods. No effort is required of the observing individual to see middens of shells that are mute evidence of the economy of early Indians and Mexicans.

In commerce, these shells have played an important part in tourist life as well as being used for various ornaments for the home. It might be added here that those native Mexicans we have had the pleasure of working with, whose livelihood it is to collect for wholesalers, feel well paid in receiving up to an American penny for the finest specimens.

Of Phyllonotus brassica, princeps, radix and regius we are not able to report any first-hand field contact, as their range is farther south than we have been able totravel, extending from Panama to Central America and Peru. We have, however, several excellent specimens in our collection which we are using here as color slide illustrations to give you an idea of the close relationship of these Phyllonotus, varying as they do mostly in color and frondular makeup. The exterior framework is much the same in each of these shells. One, Phyllonotus brassica, differs perhaps the most in its spiny form. You will notice that this shell does not have the sharp spines common to the rest of the Phyllonotus under discussion here, but instead has its exterior surface characterized by dull, knobby projections. This we feel is a very interesting divergence in shell makeup.

The Phyllonotus of the Gulf of California which we are covering in this paper fall roughly into two groups, comprised of the blacks and the pinks. What we are endeavoring to do here is to clear up the confusions that exist in many collector's minds regarding these shells. There are about seven additional species of Phyllonotus also found in this region which were unfortunately not available at this time for discussion, but for our purposes in this paper, the shells covered are those most commonly confused by collectors. The seven not included are as follows: Phyllonotus humilis, incisus, lappa, oxycantha, radicatus, varicosus and vitatus.

Murex Phyllonotus erythrostoma, Swainson. (Pink Murex)-- The general range of this shell is the Gulf of California, from Cholla Bay to Acapulco, but it has been known as far south as Payta, Peru. Its size, up to six inches in length.

This mollusk is found on low tide flat exposure, but is far more abundant just below tide level down to seven fathoms. The exterior shell is white when cleaned, and its aperture varies in color from a deep rich rose-red through many shades of pink and orange to pure white. In structure this shell posesses usually four or five varices, with its fimbriations and spines less developed than those of Phyllonotus regius.

Phyllonotus regius, Wood, 1828 (Rose Murex)-- This shell comes from farther south, ranging from Mazatlan and Acapulco, Mexico, south to Peru. It is especially common in the vicinity of Panama Bay.

Its size is four to five inches, and it is shaped generally like P. erystrostoma, though having a double row of sharp serrated spines on the six to eight varices. The exterior color of the shell is deep beige, with irregular outcroppings of black near the apex. The aperture is light pink, with the body whorl end of the columella a bright glossy black.

Phyllonotus brassica, Lamarck, 1822 (Banded Pink Murex)-- This shell ranges from Mazatlan, Sonora, Mexico, to Nicaragua, though it also has been taken as far south as Peru.

Phyllonotus brassica varies in size from six to eight inches, possessing from six to eight varices whose edges are serrated, merging into spines at the base. The surface of this shell is faced with fine revolving striae, and its aperture is

edged with a bright orange pink. The aperture itself is nearly white except for the outer edge. The most outstanding characteristics of brassica are the presence of several fairly wide brown bands revolving about the outside surface of the shell, and the blunted ends of the spines, in contrast to the sharp spines of all the other Gulf Phyllonotus under discussion.

Phyllonotus radix, Gmelin (Root Murex)-- The range of Phyllonotus radix is from Acapulco, Mexico, to Peru; it is found abundantly in the vicinity of Panama Bay. Its size at maturity is from three to five inches. It is a thick, solid shell with from ten to fifteen varices; it is white, with black spines and ribs. Its shape is more globose than the Phyllonotus we have discussed before; it is far heavier and easy to identify by reason of its distinctive round, chunky appearance.

Phyllonotus nitidus, Broderip, 1832-- Phyllonotus nitidus is found from Mazatlan to Panama. Its mature size is from four to seven inches; varices eight to thirteen, white with black fronds. This shell has caused a good deal of controversy due to its similarity to Phyllonotus nigritus. Sowerby even thought it might be a variety of Phyllonotus princeps in a young state. However, we find it to be closest to nigritus; but even here there is a distinct difference to be found in the specimens we have for illustration. Others may be found that are not so easy to differentiate. It will readily be seen here that the fronds of nitidus are beautifully frilled, recurved, and branching, while nigritus is definitely blunt-spined, straight spined, and without the frilly effect. The color variations of all these black and white Phyllonotus varieties are many; we have found them to range from almost a pure white in the smaller shells to almost a pure black in all sizes; but once the basic structure of the fronds and spines is firmly fixed in the mind, there is little difficulty in telling them apart.

Phyllonotus nigritus, Philippi-- Phyllonotus nigritus is found in the Gulf of California from San Felipe, in our experience, to Panama. Those specimens taken at San Felipe, near the norhtern end of the Gulf, were all found to be much smaller than those taken farther south, the largest of ours being about three inches, while the southern specimens average four to five inches.

P. nigritus is taken at low tide mark and below, usually heavily encrusted with lime and a difficult shell to clean. Except for their general shape, they are hard to recognize until cleaned because of this coating.

Phyllonotus princeps, Broderip, 1832-- Phyllonotus princeps is taken from the southern reaches of the Gulf of California to the west coast of Central America. Its varices are five to eight, raised into spines; the shell is whitish, touched with brown, and reaches a size of three to four inches. Its general shape resembles nigritus, though it is possibly a bit more elongated. Its biggest difference lies in its being striped irregularly with brown instead of black, and the stripes are not so clear-cut and straight-lined. Its spines are found to be open at the tips more than those of nigritus, as if they were not quite finished.

This brings to an end our discussion of a limited field of Muricidae, and we would like to add that the extent of our happiness and pleasure in working with this hobby is beyond description. We sincerely hope that all of you may find the same satisfaction from your shells as we do from ours. No little amount of the success of our hobby is based upon the knowledge and experience we have gained in our association with all of you.
(References used in assembling certain scientific facts such as range and distribution are: The Sea of Cortez, by Steinbeck and Ricketts; Panamic Marine Shells, by Maxwell Smith; and The Rock Shell Catalog, also by Maxwell Smith.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

December 7, 1954

The annual Christmas meeting was held at the home of Mr. and Mrs. John Q. Burch, 4206 Halldale Avenue, Los Angeles.

Mr. John Fitch, vice-president, called the meeting to order at 7:30 PM and welcomed an attendance of forty-three persons.

A very short business meeting was held during which the following officers were elected for the year of 1955: John Fitch, President; Dr. Mattox, Vice-President; D.L. Burford, Secretary; Mrs. Brooks, Treasurer.

After adjourning for the evening, we proceeded to the highlight of the meeting; namely, the Christmas gifts. I'm quite sure that all present received welcome additions to their collections.

Following the opening of presents, we feasted on many tasties furnished by several of our members. - - - - - - - - - - - D.L. Burford, Secretary

* * * *

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

January 4, 1955

The January 4th meeting of the Conchological Club was called to order by the President, John Fitch. He thanked Rose Burch for her generous hospitality in allowing our group to meet at her home for our fine Christmas party. Mrs. Burch in turn thanked the members who had assisted with the refreshments.

New officers for this year were then introduced: President, John Fitch; Vice-President, Dr. Norman Mattox; Secretary, D.L. Burford; Treasurer, Mrs. Donald Brooks. - - - The minutes were accepted as read.

The past Treasurer, Bessie Faulkner gave an interesting over-all report for 1954 as follows: Total membership 60; average members in attendance, 30 1/3; average guests in attendance 10 1/2, making a total of 40 1/4 present at each meeting. Seven members were commended for a perfect attendance record. Dues received $28.00; money on stationery, $2.50; total cash taken in, $59.00; cash on hand, $24.17. At Mr. Fitch's suggestion, Bessie was congratulated by a round of applause for the faithful services she has rendered for the past two consecutive years.

The Secretary read a communication from Paul Bartsch of the National Museum, stating that he is beginning a monograph on Turridae and would appreciate any help, suggestions, and duplicate specimens from the West Coast, and from our club members in particular.

Four guests were introduced, including Mrs. Jean Wilkins, President of the Long Beach Shell Club; who announced that two of our members, Mr. and Mrs. Crawford Cate, will be the guest speakers at next Sunday's meeting, January 9th.

Mrs. Chace read an interesting letter from Myra Keen of Stanford, and an accompanying clipping from the San Francisco Express congratulating her on receiving $1,000 from an anonymous donor, for further research in Conchology.

Our President, Mr. Fitch, suggested a program of field trips for the coming year; which seemed to meet with the approval of everyone. This included four trips: Collecting in a bay area such as Newport, perhaps in February; Collecting on an Ocean beach a little later in the spring; collecting fossils, perhaps in the summer; and collecting at Cholla Bay, at Punta Penasco; which would be a family camping expedition scheduled for next fall, possibly November.

Under Committee reports, Mr. Fitch got the Club off to a good start for the new year by restating and re-classifying some of the committees as follows: 1st: A new position of Hostess; to greet and introduce guests and new members, to be filled by Mrs. Rose Burch. 2nd: The Nomenclature Committee will be replaced by a group to report on pertinent and new publications consisting of the following members: John Q. Burch, Dr. Norman Mattox, George Kanakoff, John Fitch, and Dr. W.O. Gregg. 3rd: As Vice-President, the new Program Chairman will automatically be Dr. Norman Mattox. It was suggested that since our Secretary, Damon Burford, will be sailing with an expedition of the Fish and Game Dept. on a trip down the coast of Lower California and the Gulf of California, during February; he should be able to bring us a fine report for our March meeting.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
January 4, 1955

New material from the Marine Scientist on the "Fauna of brown Shrimp found in the West Gulf of Mexico", was brought to our attention as well as an article from the current issue of Systematic Zoology, on the Sea Spider. At the same time, a new species of Pecten dredged from our coast in 340 fathoms, and preserved in alchohol, was passed around so that we could see the host worm to which it is always attached.

During intermission we enjoyed a closer inspection of the many fine shells brought back by our President from his recent trip to the Marshall Islands with Dr. Bruce Halstead of the Loma Linda School of Tropical and Preventive Medicine.

The program for the evening continued with the showing of many beautiful colored slides taken by Mr. Fitch; which were accompanied by his interesting comments. He began with pictures of the lush scenery of Hawaii, and showed each step of the journey by plane and boat to the landing and life on Jaluit Atoll. We were all treated to a trip that looked and sounded like paradise to a shell collector, without actually having to fight the discomforts of mosquitoes, head, and sharks. Actual pictures of each of the different types of collecting areas, together with the description of what was found in each area, were of particular interest. Also interesting, were accounts of the difficulties encountered in capturing specimen fish to bring back for study. When the sun sank in the last glorious sunset, in the last picture, we were as reluctant to leave as I am sure Mr. Fitch must have been. This was a most delightful and informative evening for us all.

Florence Thurlow
Secretary, Pro. Tem.

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New Publications

Five new species and a new subgenus in the pelecypod family cardiidae By A. Myra Keen Bulletins of American Paleontology, Vol. 35, No. 158, Dec. 20,1954. 24 pages, 1 plate, 9 text figs.
This careful work represents a review of the genera discussed with excellent keys to species and genera. Many of the species are known both Recent and Fossil.

Corambella baratariae, a New Species of Nudibranch from the Coast of Louisiana by Harold W. Harry- Occasional Papers of the Marine Laboratory, Louisiana State University, Baton Rouge, La. 9 pages 1 plate.
This is a carefully prepared paper in which Dr. Harry gives the comparative data for other species.

Venus- The Journal of Malacology of Japan- Malacological Society of Japan Vol. 18, No.2 Nov. 1954.
New Aquatic Gastropods from Japan by Tokubei Kuroda and Tadashige Habe- text in both English and Japanese. 4 new species.
Notes on Three Remarkable Spevies of Japanese Gastropods by the same authors. An interesting note on the systematic position of Thatcheria differing from certain other authors.
A matter of more interest to those of us on this coast is the discussion of the species the authors consider Beringius (Japelion) adelphicus (Dall). In our Minutes #50,p.13, July,1945 we decided to use the generic name Jumala Friele,1882 and reject Beringius Dall,1886. The reasons for so doing are too involved to cover here, but the matter should be agreed upon because at least all specimens of the group covered by Dall's Beringius have been labelled in my establishment as Jumala.
New Genera of Japanese Marine Gastropods by the same authors. 12 entirely new genera are named and described. None seem to cover species from this coast although two might be used.

Description of a New Species of Phenacolepas (Ph. nakamigawa) from Hachijo-jima By Isao Taki
On Two New Forms of Paleogene Gastropods from Hokkaido,Japan By Atsuyuki Mizuno
A New Subspecies of Venerupis from the Pleistocene Deposits in the Southern Kwanto Area, Japan by K. Hirayama and Y. Ando.
Studies on the Race of Gryphaea gigas (Thunberg) By Yatarp Tanaka
Systematic Relative Growth in Molluscan Shells By Ikuso Hamai.

Algumas Observacoes Sobre A Associacao Faunistica Nas Camadas Terezina (Serie Passa Dois) Do Parana By Karl Beurlen
Univ. Do. Parana-Arq. Geologia No.1, 1954
Estratigrafia E Idade Geologica Da Serie Tubarao By Frederico Waldemar Lange No. 2 of above.

Australian Newsletter Nov. 1954. There is an article in this issue with a figure that interests me. It is " Collapsible Trap for Small Boats". Of course, the trap is designed for crayfish or typical lobster trap. However, the same design is perfect for mollusks and I well recall that a few traps would quickly fill your boat. These collapsible traps should be great because a number of them could be taken out and set and little boat room needed.
** Some of the finest and rarest of shells that come to my hands have been taken in traps. I might add one note though. Do not attempt to set them in even reasonably shallow water or they will be quickly filled with the common scavenger species. Set them in deep water with plenty of line and a brightly painted can for float.
Reports on Japanese Oysters in Tasmania- This is of passing interest because we have been using so much of the seed oysters on this coast. They are apparently doing well in Tasmania also.

The Puget Sound Oyster Bulletin- published by the State of Washington, Dept. of Fisheries , State Shellfish Lab.,Quilcene,Wash.
These papers occasionally contain some very interesting data. For example the experiment with the oyster drill imported with the seed oysters from Japan. " On April 10, six clusters of egg capsules (108 eggs) were collected at one of the packing sites in Japan...." " A total of 24 days elapsed between the time the eggs were packed in Japan and unpacked in our laboratory..." The eggs were placed in running water on May 1. Of the 108 eggs but 94 survived. On June 19 10 of the eggs were opened and contained an average of 14 developing drills. The 94 eggs that survived therefore contained approximately 1,316 drills.

Applied Systematics: The Usefullness of Scientific Names of Animals and Plants by Waldo L. Schmidtt Smithsonian Report 1954 15 pages and a very interesting paper.

Circulares del Museo y Biblioteca De Zoologia De La Habana
Ed. M.L. Jaume, 13 No.351, Vedado,Habana,Cuba. $1.50 per 100 pp.
May-June 1954. This issue continues the valuable reproduction of Los Moluscos de Cuba ... by A d'Orbigny pp 1127 to 1151.
Hunting Tree Snails in Cuba by Joseph Wharton Lippincott.
The notes and news of a host of persons and publications is always of great interest and value in the circulares.

Annual Reports for 1952 and 1953 published in 1954 of the National Museum of Victoria. Outlines work being done.

Notes and News

Allyn Smith mentioned that he had a Christmas card from Dr. Al Mead from Ceylon.

Dr. Henry van der Schalie visited in San Francisco on his return from Egypt recently.

Dr. G.D. Hanna is visiting in the east and plans to visit Washington. He may return to Pt. Barrow, Alaska this summer.

It was of passing interest when a 37 pound, 9 ft. squid was taken off Southern California. It was caught in a dragnet in 200 fathoms off Santa Rosa Island.

Quite an article in the Mirror recently about the culture pearls of Japan. A good price hike on them is predicted.

An article in the Herald and Express showed a picture of the beach near Aberdeen,Wash. covered with dead clams. " Fish ' Murder Mystery' on Washington Shore". The so called red tide so frequently resposible for the death of thousands of shellfish was ruled out in this case and the cause was a mystery at the time.

Oliva caribaensis Dall - The lot from the coast of Venezuela has caused considerable comment and discussion. For example one from Mr. R. Wright Barker " Very many thanks for the parcel of Olividae which came in Saturday and are very nice indeed. They filled up several rather bad gaps in some cases and in others helped to round out series of species I already had represented. Like you I have been very puzzled by the Caribbean forms and though I have a fair number I am still uncertain regarding many of them and the form you list as O. caribaensis Dall has me puzzled. I have several quite similar to those you sent and though the form and ground color fit the original description rather well, also the over-all pattern, the shells are considerably larger than the types and lack the purple colour of the interior stressed by Dall. Perhaps this is only well developed in young shells as I have noticed that this is the case for O. sayana- two very large specimens I have entirely lack the typical deep purple of most of my other specimens, yet I am sure they are the same species. I have other shells very close to those you sent in shape, size and general pattern but much paler and more cloudy (i.e. no really definite pattern at all) from Venezuela, and those I originally classed as a variety of O. reticularis. I may get up the National Museum sometime early next year and if I do I have a number of problem children besides these which will go with me and I'll let you know the results if any."

Professor H.W. Miller of Santa Clara, Cuba writes a bit about Oliva also " ... Over this way one of the problem species is Oliva reticularis L . They seem to be using the name Oliva reticularis pattersoni Clench here in Cuba for a form or forms that vary from nearly the typical all the way to dark brown with a narrow central light spiral band and I have even seen a lot containing one black specimen.None of these fit Clench's description as they all show the zigzag markings through the dark color and most of them have the axial lines at the suture. Personally I think this species willeventually show a continuous series of minute variations that will make it silly to try to place any given specimen under any subspecies..."

An article in the Mirror with large picture of boys having snail races. Speedy burned up the 3 ft. track in 5 minutes.

REVIEW OF THE CHITONS OF THE WEST COAST OF NORTH AMERICA, NORTH OF MEXICO

PART 2

by Allyn G. Smith

Superfamily *MESOPOLACOPHORA*

Family *Ischnochitonidae*

"Valves external, having sharp, slit, insertion plates, the teeth not buttressed. Eaves solid...; girdle covered with imbricating scales, either flat or convex, smooth or striated. Gills typically extending the entire length of the foot, but in some species they are short in front or at both ends." (Pilsbry, Manual, 15: 53).

Surface of the intermediate valves are divided into lateral and central areas by a diagonal, which is often indistinct, but which extends from the beak to the outer front angle of the tegmentum. If this is not clearly the case, the tail valve has an even crescentic series of well developed teeth. In the *Ischnochitonidae* the teeth are never closely and finely pectinated. The valves lack eyes.

According to Pilsbry, *Ischnochiton* is the typical or central point in the development of the sharp-toothed division of Chitons, around which the other genera naturally group themselves. The great diversity of the girdle characters permits the use of them as a basis for division into subgenera and, if desired, into sections.

The classification of the *Ischnochitonidae* used here generally follows that used by Berry (1922), who divides the family into three subfamilies-- *Chaetopleurinae*, *Ischnochitoninae*, and *Callistochitoninae*. Thiele (1929) recognized only the first two of these families.

Subfamily *Chaetopleurinae*

Upper surface of the valves generally set with pustules, which are arranged in radial rows or in no regular order on the tail valve and the lateral areas (of the intermediate valves), and in parallel rows on the central areas. Upper part of the girdle with small, generally scale-like shelly spines and with sometimes larger and sometimes smaller needle-like spines with more or less long, basal doubled pores (Doppelbechern). Side plates of the radula with three or two-cusped rachidian teeth. (Trans. from Thiele, 1929, part 1, page 15).

Genus *Chaetopleura* Shuttleworth, 1853

"The valves are solid, porcellaneus within, having rather long sharp teeth and squared sinus. Externally they are sculptured with longitudinal beaded riblets on the central areas, and pustules or pustulose ribs on the lateral areas. Mucro in front of the middle. Girdle having corneous haris, sometimes rising from a dense mass of chaffy scales." (Pilsbry, Manual, 15:70).

Type, by subsequent designation (Dall, 1879, p. 296), *Chiton peruvianus* Lamarck, (date?).

1. *Chaetopleura beanii* (Carpenter, 1857)

Range: Unalaska, Alaska, to Mazatlan, Mexico (Dall, 1921). Type locality, Mazatlan.

Remarks : This is a little-known species, which has not been figured.

Collecting Records: Does not appear in any of the material examined, or in any recent published records so far as is known.

2. *Chaetopleura gemma* Dall, 1879

Range: Straits of Georgia, B.C. (Berry, 1922), to Magdalena Bay, L. C. (Dall,1921). Type locality, Monterey, California.

Remarks: Our commonest Californian *Chaetopleura*, characterized by the eloggated cylindrical pustules that decorate the lateral areas of the intermediate valves and

the head valve. The color is variable, Southern California specimens and those from the Mendocino County Coast being of a dingy brown or gray, while the most frequent color of specimens found at Monterey is a bright terra-cotta red, often with the end valves black, or with black spots on the intermediate valves along the jugal ridge. An occasional orange-yellow specimen is found with black markings as in the red-colored form. Found at low tide, under rocks, down to 15 fathoms.

The original spelling, "*gemma*", a jewel (see Dall, 1879, p. 296), should be used instead of the emended version "*gemmea*", which has found its way into the literature.

Collecting Records: Straits of Georgia, B.C., W.F. Thompson, coll. (Berry, 1922,p. 461). California:- Mendocino Co.- Fort Bragg (Hemphill, coll. (CAS, A.G. Smith); Little River (AGS); Anchor Bay (AGS); near Gualala (AGS)- Sonoma Co.- near Jenner (AGS). Marin Co.: Pt. Reyes (AGS). San Mateo Co.: Moss Beach (AGS). Monterey Co.: Monterey, Pacific Grove, Carmel, etc., low tide to 1t fms. (Berry, Burch, Chace, Smith, Willett). San Luis Obispo Co.: San Simeon (Burch); near Cayucos(AGS); near Morro (AGS). Santa Barbara Id., Hemphill, coll. (CAS). Los Angeles Co.: White's Pt. (AGS); San Pedro (Willett). San Diego Co.: off San Diego (Gripp, Nautilus,22: 136). Lower California:- San Geronimo Id., Todos Santos Bay (Willet); Santo Tomas Hemphill, coll. (CAS); Arbolitos, 10 mi. So. of Punta Banda (Burch).

3. *Chaetopleura lactica* Dall, 1919
Range and Type Locality: Catalina Harbor (Dall).
Remarks: Certainly known only from the type lot.
Collecting Records: Listed by Willett from the Los Coronados Ids., Mexico, in 15 fms. His specimens have not been examined.

4. *Chaetopleura parallela* (Carpenter, 1864).
Range: San Diego, California, to Cape San Lucas and West Columbia (Dall, 1921). Type locality, Cape San Lucas, Lower California.
Remarks: In the Manual of Conchology, Pilsbry (14:33,34) cites both *C. parallela* and *C. prasinata*, along with *C. columbiensis* Sowerby, as varieties of *C. lurida* Sowerby. A large series of *lurida* collected at Panama and preserved in alcohol shows considerable minor variation in sculpture and wide variation in color. Nothing like these specimens have been seen from north of San Diego, so the San Diego and any other California records would appear to be in need of confirmation before either *parallela* or *prasinata* are admitted to the list.

The style of sculpture of *C. parallela* is said to be the same as in *C. gemma*,but the shell of the former species is much broader.
Collecting Records: None recently, so far as known.

5. *Chaetopleura prasinata* (Carpenter, 1864)
Range: San Diego, California, to Cape San Lucas, Lower California (Dall,1921).Type Locality, Cape San Lucas.
Remarks: See remarks under the preceding species.
Collecting Records: In the Burch Collection is a series of 7 specimens of a species of *Chaetopleura*, dredged in from 35 to 60 fathoms off southern California, that are labelled *prasinata* but are provisionally assigned to this species only with considerable doubt. All specimens are small (3-7 mm.), the smallest ones being undoubtedly juvenile. They are nondescript in their dark coloration but the principal feature consists of the sutural tufts of sharp-pointed spines from 3 to 6 in number, some of them quite long for the sizeof the shell. These are in addition to other, shorter spines or spicules that are scattered generally over the girdle. Localities of the Burch specimens are as follows: Off El Segundo, shale, 35 fms.;

off Redondo, 60 fms.; off Bluff Cove, 50 fms.; off Santa Cruz Id., 50 fms. Willett is reported to have taken C. prasinata from the following localities: Catalina Id., 30 fms.; Coronado Ids., Mexico, 15 fms. As his specimens have not been examined, it is not known whether they belong to the same species collected by Burch, but this seems likely.

Subgenus Pallochiton Dall, 1882

"Valves exposed, solid, the anterior and median having sharp insertion teeth slightly roughened outside; slits of anterior valve not corresponding to anything in the external sculpture; tail valve having the mucro at the posterior end, the teeth sharp and all strongly directed forward; eaves solid; sinus notched atsides. Girdle leathery, with a few deciduous hairs, but no pores." (Pilsbry, Manual, 14: 256).

Type, by monotypy (Pilsbry, 1893, Manual, 14:256,7), Pallochiton lanuginosus Pilsbry, 1893.

"This genus closely resembles in sculpture as well as structural characters, Chaetopleura Shuttlew.; differing only in the posterior position of the mucro and the consequent throwing forward of the tail-valve insertion-teeth,- characters of no great importance. The slits correspond in position to nothing in the external sculpture. The girdle is decidedly like Chaetopleura, being very sparsely hairy (or smooth) and lacking all appearance of pores." (Pilsbry, Manual, 14:257).

6. Pallochiton lanuginosus Pilsbry, 1893
Range: San Diego, California, to Magdalena Bay, Lower California, Type locality: Todos Santos Bay, Lower California.
Remarks: "The posterior terminal mucro, leathery girdle, and beaded sculpture well distinguish this species. The coloring of some specimens (such as those from S. Ignacio Lagoon, Lower California,..) is of exquisite delicacy. Old individuals generally lose the pustules of the surface except at the base of the valves..... "A peculiarity of coloring not mentioned in the description is the vertical white stripe extending down the posterior slope from the mucro of the tail valve. In the great number of individuals examined by me I have never found this lacking." (Pilsbry, Manual, 14:258).
Collecting Records: None recently reported from north of the Mexican line (lower California). The San Diego record needs confirming. Lower Californian records are as follows: Todos Santos Bay (Willett); rubble reef, Punta Banda, Todos Santos Bay (Burch); San Quentin Bay, Connelly coll. (Burch); San Ignacio Lagoon, Hemphill coll. (CAS); Pt. Abreojos, Hemphill coll. (CAS); Magdalena Bay, Orcutt coll. (CAS). In the collection of the California Academy of Sciences is a lot of 5 specimens, No. 4002, with the following label in Hemphill's handwriting: "Original lot, Cpr. Todos Santos Bay, Lower Calif. (narrow). Coll. by H.H."

Subfamily Ischnochitoninae

Shell with heterogeneous sculpture, sometimes long and narrow, but mostly of the usual shape, teeth of the insertion plates not pectinated as a rule although this may be more or less suggested. Upper part of the girdle generally decorated with fairly large, closely-set, frequently striated scales, while spicules set in doubled pores, (Doppelbechern), are limited entirely to a row around the girdle edge. (Trans. from Thiele, 1929, pt. 1, p. 16).

Genus Ischnochiton Gray, 1847

"Valves external, having sharp, slit, insertion plates, the teeth not buttressed. Eaves solid...; girdle covered with imbricating scales, either flat or convex, smooth or striated. Gills typically extending the entire length of the foot, but in some species they are short in front or at both ends."(Pilsbry,Manual,14: 53)

Type, by subsequent designation (Dall, 1879, p. 296), Chiton longicymba Quoy & Gaimard, 1834.

Subgenus Stenoplax Dall, 1879

"Elongated, narrow Ischnoids, having the girdle covered with minute, crowded, imbricating striated scales. Median valves having the lateral areas much raised; posterior valve large, depressed, the mucro subcentral or slightly posterior." (Pilsbry, Manual, 14:56).

Type, by subsequent designation (Pilsbry, Manual, 14:56), Ischnochiton limaciformis Sowerby, 1832.

Stenoplax divides naturally into two sections: (1) Section Stenoplax s.s., in which the median valves have a single slit on each side, and (2) Section Stenoradsia, the species of which have two or several slits in the median valves, according to Pilsbry. Berry uses Stenoplax in a generic sense, with Stenoradsia as a subgenus. Thiele treats Stenoplax as a subgenus, with several sections, but Stenoradsia appears as a section of the subgenus Ischnochiton in his arrangement, which possibly is an incorrect assignment in view of the extremely close relationship between the two groups.

1. Ischnochiton biarcuatus Dall, 1903
Range: Santa Barbara to San Diego, California (Dall, 1921). Type locality, 40-60 fathoms off Catalina Island (Lowe).
Remarks: The type specimen (dry) measures 18 mm. by 7mm. The sculpture of the central areas of the intermediate valves consists of "two sets of arcuate radiations crossing each other obliquely and with the inter-reticulations impressed or punctate so that an irregularly zig-zag effect is produced..." This ought to be ample to identify this species. The single slitting of the intermediate valves places it in the section Stenoplax s.s. No specimens have been available for study. The species must be rare as Burch did not dredge it in his collecting off Southern California.
Collecting Records: None except the original lot known.

2. Ischnochiton conspicuus Pilsbry, 1892

Range: Santa Barbara, California, to Magdalena Bay, Lower California; between tides. Also Pleistocene at San Pedro, Santa Monica, Long Beach, and San Diego (Berry, 1922). Type locality, San Diego, California (Oldroyd).
Remarks: This species belongs to the section Stenoradsia, Carpenter, 1878. It may be separated from I. magdalenensis Hinds and I. heathiana Berry by the girdle, which is not scaly but "densely beset with short bristles, giving ir a velvety aspect. Not mentioned in the original description, but shown by Pilsbry (Manual, 14, pl. 15, fig. 94), are the fine striations of the bristles that are clearly seen under magnifications of x14 and higher. Very young specimens of conspicuus are separated only with difficulty from similar sized specimens of magdalenensis and heathiana. The interior of the valves is often tinted with brilliant color, usually a deep pink but sometimes blue-green. Often there is a narrow blue-green band of color at the sinuses of the valves. It is a very large, fairly common species, well-named.

The normal habitat of this Ischnochiton is the undersides of smooth rocks buried in sand or gravel; another is between slabs of shale or rock in deep where the wash of the waves does not reach.

E.P. Chace (Nautilus, 31:37-40) gives an interesting account of the variation in conspicuus and comments particularly on the differences in the shape and texture of the valves of individuals that live in the exposed lower ends of holds long since vacated by the rock-borer Parapholas californica. He calls attention to the name given this variant- "var. solidus" - by Pilsbry (Manual, 14:64) and condludes it is merely a situs form, a viewpoint that seems correct. Another variant, a 6-valved specimen collected by Hemphill, is reported by Stearns (Nautilus, 15:53). While 7-valved specimens of chitons have been found occasionally, one with only six normal valves would be an extreme rarity.

Ischnochiton conspicuus is of special interest because of the three species of gastropods and one pelecypod that are occasionally found living commensally with it, usually under the edge of the mantle. Teinostoma invallata Carpenter, T. supravallata Carpenter, and Vitrinella oldroydi Bartsch have been found in such association, as also has the minute bivalve Serridens oblonga Carpenter, the first report of which was given by Kelsey (Nautilus, 15:144).

Proof that Indian tribes of Southern California found this large chiton an acceptable item of food is found in reports of valves occurring in kitchen middens on San Nicolas Island, and near Santa Monica, Redondo, and La Jolla (Berry, 1922,p.465.)
Collecting Records: California- Los Angeles Co.: San Pedro (Willett); White's Point (Burch); Malaga Cove (Burch); San Onofre (Burch). Orange Co.: Reef Point (A.G. Smith); Dana Point (Burch); Laguna (Willett). San Diego Co.: La Jolla (AGS); San Diego, Oldroyd coll. (CAS); breakwater, North Island (AGS). Lower California (Outer Coast): Punta Banda and El Morro Point (Burch); Santo Tomas, Hemphillcoll. (CAS); San Martin Island (F.Baker, Nautilus, 16:42); South Bay, Cedros Island (Lowe, Nautilus, 27:28). Lower California (Gulf): Angeles Bay, Hemphill coll. (CAS); San Carlos Bay (Steinbeck & Ricketts, p. 554); Conception Bay (Boone, 1928, p.17.).

The A.G. Smith Collection has two sets of disarticulated valves (girdle not retained) from 3 miles north of Cayucos, San Luis Obispo Co., California, one set of which is probably I. conspicuus. Because this represents a considerable extension of range, and because this extension would be north of Point Conception, which is the northern end of the ranges of many warmer water species, and because I. heathiana is found at this locality in unusually large size, it is thought best not to recognize the record until confirmed by specimens with girdle intact, which would remove all uncertainty of identification.

3. Ischnochiton corrugatus Pilsbry, 1892
Range: Cataline Island, California, to Todos Santos Bay, Lower California. Type locality, (Dall, 1921) Catalina Island.
Remarks: A Carpenter species, validated by Pilsbry in the Manual of Conchology, but not figured. Dall lists it in the subgenus Ischnochiton s.s., where Carpenter placed it originally, but Pilsbry thought it ought to be listed as a Stenoplax although he had not seen specimens. A single specimen that seems to be adult, dredged by John Q. and Tom Burch in 25 fathoms off Redondo, California, answers the description fairly well and is referred to this species with some confidence. It is certainly a Stenoplax,belonging in the section Stenoplax s.s. as it has single slits in the median valves.

"Differs from Stenoplax sanguineus (I. (Stenoplax) limaciformis Sowerby) in sculpture as well as in the mantle-ornamentation. A specimen from Todos Santos Bay (under a stone between tides) collected by Henry Hemphill is about the size of limaciformis from Mazatlan, and it would naturally be so called; the sculpture, however, is sensibly different, both from that and from fallax. The central areas are minutely, and the jugal areas very minutely, wrinkle-punctate (the) wrinkles angular, irregular; lateral areas moderately defined and elevated, and, together

with the end valves, irregularly, subconcentrically and strongly corrugated. Mucro median, planate. This species is a *Stenoplax* in form, but a true *Ischnochiton* in its imbricated scales, which are, however, extremely minute. This specimen is regularly arched, much less elevated than the type, with which, however, it agrees well in particulars. Length 21, breadth 9 mill." (Pilsbry, quoting Carpenter ms., Manual, 14:123,124).

The original description makes no mention of color except by reference to the variably-colored *limaciformis*. The Burch specimen is externally a purplish-red on all valves, with *flecks of buff* on the central areas that can hardly be said to be a prominent color feature, being almost lost in the red ground-color of the shell. Internally, the valves are a lighter red around the central areas with a wash of dark color immediately adjacent to the sutures. The girdle scales are larger, wider and thinner than those of *fallax* or *limaciformis* and are also more prominently striated. These striations *are seen easily* under a magnification of x45, whereas it takes about x90 to show the striations of the scales of the other two species. In addition, the girdle is sparsely set, toward the edge, with minute, broadly conic, pointed, glassy spines (barely visible at x20). One or two of these occur at the sutures also. This is a remarkable feature, not observed in any of the specimens of *fallax* or *limaciformis* examined. Careful study of other specimens, when they *become avaiable, should be* made to determine whether this feature is a constant one.
Collecting Records: Type lot from Catalina Island, beach to 40 fms., J.G. Cooper coll. (said to be in the old California State Collection, Nos. 1066, 1070, 1074); * 25 fms. off Redondo (Burch); a single specimen preserved dry and slightly curled, measuring 18.0 mm. in length and 7.2 mm. in width. Five very much smaller and probably juvenile specimens from the same locality are provisionally referred to this species also, although they do not have the glassy spines heretofore mentioned.
* A few lots from this collection are still extant in the Univ. of California coll. at Berkeley. No longer preserved.)

4. *Ischnochiton* *fallax* Pilsbry, 1892
Range: *Vancouver Island*, B.C., to Todos Santos Bay, L.C. (Dall, 1921). Type Locality, Monterey, California.
Remarks: Another Carpenterian species, validated by Pilsbry. Berry (1922, p.462) *records* it from Fort Brass, California, to the Santa Barbara Channel, shore to 15 fathoms. It is found along with *I. heathiana* Berry under smooth rocks or boulders buried in sand or fine gravel, but *is scarce.* Superficially, it might be mistaken for highly colored *heathiana* but the girdle scales are extremely small, giving the girdle a leathery *appearance* when dried. The girdle of *heathiana* is distinctly scaly without the aid of a glass. In living specimens *of fallax* the foot is reddish-orange, whereas the foot of *heathiana* is light yellow, the *darker* foot of the former being at once apparent *upon direct* comparison.

"The peculiar features are the roundly arched outline and single slitting of the central valves, the terraced appearance of the lateral and terminal areas due to the very strong growth lines, the fine, wrinkly, radiating sculpture of these regions, and the very even and delicate ribbing and pitting of the central areas, though the ribs are hardly evident without a lens. All these characteristics serve to separate *fallax* from *magdalenensis* (i.e. *heathiana*, as now understood) and young *conspicuus, with which it is alone likely to be confounded.*"(Berry, 1922, p.462). It belongs to the section *Stenoplax* s.s.

Two lots, together comprising ten specimens collected by the writer in the vicinity of Monterey and Carmel show the following range in external coloration: (a) light brownish-buff, with hardly any suggestion of mottling; (b) red-brown, with sparse mottlings of wine-red; (c) sea-green, strongly painted with buff and wine-red along

the jugal ridges; (d) wine-red with buff markings, especially on the jugal areas of all except the head valve. Internally, the valves are more highly colored with red than most specimens of heathiana.

When full-grown, fallax reaches the size of the largest heathiana,two large specimens, preserved dry, measuring about 62 mm. in length. A full-grown specimen in the California Academy Collection from Union Landing, Mendocino Co., California, preserved in alcohol, measures about 70 mm. in length.

Collection Records: California- Mendocino Co.: Union Landing (CAS); Fort Bragg, Hemphill coll. (CAS); Monterey Co.: Pacific Grove at Cabrillo Point, in a tide pool (A.G. Smith); Monterey Peninsula (Hunter); Carmel (Hunter); 5 mi so. of Carmel (AGS). Los Angeles Co.: White's Point, near San Pedro, T.S. Oldroyd coll. (Gordon Coll.); off San Pedro in 20 fms., 2 young specimens (Willett); off Long Beach in 16 fms., a full gorwn adult (Willett). Lower California-Arbolitos Point, a single young specimen (Willett)

I. fallax has been reported as a fossil from San Pedro at Nob Hill Cut and Deadman Island, the latter locality being no longer extant.(Berry, 1922, p.462).

5. Ischnochiton heathiana Berry, 1946
Range: Union Landing, Mendocino Co., California, to Santo Tomas, Lower California. Type locality, between tides, shore of Monterey Bay at Pacific Grove, Monterey Co., California.
Description: Not in Oldroyd and taken from Berry's recent paper (A Re-examination of the Chiton, Stenoplax magdalenensis (Hinds), with description of a new species; Proc. Mal. Soc. (London), Jan. 1946, vol. 26, part, 6, pp. 161-166, pls. 4,5), as follows: "Animal moderately large, narrow, elongate; shell moderately elevated, with rounded to subcarinate dorsal ridge and weakly arcuate side-slopes.
"Anterior valve with numerous (60 to 70) low close radiating ribs, which usually are worn nearly or quite away at maturity, and also are varying noded by the stronger of the growth-lines, with deeper interruptions brought about by intersection of the very strong resting-stage marks; anterior slope straight or very faintly concave. Intermediate valves: Central areas where unworn marked by fine close anastomosing wrinkles or riblets, more or less longitudinal on the jugum, diverging and more reticulate pleurally, with the interstices respectively either more or less groove-like or developed as shallow angular pittings; lateral areas sharply raised,flattened above, their sculpturing of 13 to 18 low narrowly separated riblets resembling that of the head-valve. Posterior valve large, semi-lunate, with weakly projecting central mucro; central area sculptured much like the corresponding region of the valves in front; posterior area sharply raised anteriorly and sculptured with perhaps 60 to 75 low riblets similar to those seen on the anterior valve; posterior slope moderately concave.
"Interior of anterior valve often with a rather heavy callus across the apical half, bounded in front by a sharply jagged resting-mark; posterior border thickened and sharply elevated. Intermediate valves with weakly sinuous, strongly projecting, rather narrowly rounded sutural laminae, with steep inner slopes leading into small notches at the sinus. Posterior valve with rather shorter, more evenly rounded laminae, the inner notches deeper and more oblique due to the sinus-plates being produced on each side into a small sharp slanting spine, a feature which may, prove somewhat variable. Eaves heavy, solid, projecting. Teeth squarish in terminal valves, more oblique in intermediate valves. Slits in disarticulated paratype 14, 3-1, 2-2 (plus 1 small), 2-2, 2-3 (plus 1 small), 3-2, 2(plus 2 small)-3, 9.
Girdle moderately wide, clothed dorsally be numerous very fine, crowded, erect, incurved, rather loosely imbricating, blunt, finely striate scales.
"Ctenidia 36 on a side (paratype).

"Colour of dorsal surface of shell pale greyish or brownish cream (Pale Olive-Buff to Olive-Buff), variably painted and flamed with light to dark greenish grey (Mineral Grey to Dark Ivy Green) in the younger individuals, usually wearing to a general dull greyish buff (near Vinaceous-Buff) as the animals approach maturity. Dorsal surface of Girdle varying from Olive-Buff to Hair Brown, with large cloudy spots or bands of Light Drab in the paler individuals to Chaetura Drab in the darker. Articulamentum of young animals usually rather creamy, with a suffusion of Glaucous-Blue, which may give way to Pale Vinaceous-Pind and Light Terre Verte in older ones.

"Measurements of holotype: Max. long. 77.0, max. lat. 31.1, alt. 13.4, long. shell only 62.0, diam. tegmentum valve v 25.0, diam, tegmentum valve vi 25.0mm.; of paratype- max. long. 68.0, max. lat. 28.0, alt. 13.1, long. shell only 62,0, diam. tegmentum valve v 23.2, diam. tegmentum valve vi 23.2 mm.

"Holotype: No. 7847k Stanford University Paleo. Type Collection.

"Paratypes: Nos. 885, 4728, and 8572, Berry Collection; others to be deposited in the collections of the San Diego Museum of Natural History, Hopkins Marine Laboratory, United States Museum, British Museum, (Natural History), and the private collection of Allyn G. Smith."

Remarks: According to Berry (loc. cit.) this species has long masqueraded under the name magdalenensis, which is a species described originally from Magdalena Bay, Lower California, and has a verified range on the ocean side of the peninsula of Lower California from South Bay, Cedros Island, to Cape San Lucas, and in the Gulf at Punta Penasco, Sonora, Mexico. I. acrior Pilsbry, 1892, is placed in synonymy with I. magdalenensis.

I. heathiana differs from magdalenensis in the following principal particulars; (a) the outline of the animal is elongate and narrower than that of magdalenensis, which is elongate-ovate; (b) the central areas of the valves are much more delicately sculptured, lacking the heavier transverse ribbing of magdalenensis; (c) the lateral areas of the intermediate valves are much less prominently raised and have more delicate sculpture. Heathiana is immediately distinguished from conspicuus in the adult stage by its scaly girdle, finer sculpture, less prominent lateral areas, and the straight or only fainly concave head valve. (The head valve of conspicuus is strongly concave and often somewhat everted at the apex). In the young stage it is often difficult to distinguish between the two species but the shape of the head valve appears to be the best diagnostic feature in such circumstances.

The northern range of heathiana probably does not extend above Cape Mendocino. Although not rare by any means at Union Landing, above Wesport in northern Mendocino Co., we failed to find it while collecting at Shelter Cove, in southern HumboldtCo. Southern California and Lower California records for heathiana should be carefully checked to be certain they are not young conspicuus, particularly if the specimens are quite young (10 mm. or less).

The largest full-grown specimens seen came from Cayucos, San Luis Obispo Co., Calif. and measured 77mm. in length. Large specimens from the Monterey region measure up to 72mm. in length. Measurements are for specimens preserved dry.

Fossil specimens have been reported from the Pleistocene at San Pedro (Nob HillCut) and at Deadman Island in a formation of doubtful age but probably Pleistocene.

Collecting Records: California- Mendocino Co.: Union Landing (A.G. Smith, CAS); Fort Bragg, Hemphill, coll. (CAS); Little River and Albion (AGS). San Mateio Co.: Moss Beach (AGS). Monterey Co.: Monterey and Carmel (Many collectiors); 5 mi. so. of Carmel (AGS). San Luis Obispo Co.: Cayucos (Burch, Hemphill, AGS). Los Angeles Co.: White's Point (Hemphill, Willett). Orange Co.: Laguna (Willett). San Diego Co.: La Jolla (AGS). Lower California: Punta Banda and El Morro Point, young specimens(Burch)

6. Ischnochiton sarcosus Dall, 1902

Range: SanPedro, California, to the Gulf of California. Type locality, off San Martin Island, Lower California, F. Baker coll. (Dall, 1902, p. 558).

Remarks: This is a scarlet and white, marbled species, of which the type measures 36mm. in length. The girdle, which is "densely set with small, curved, smooth bristles of different sizes, dark red and white mixed", and the double slitting of the median valves immediately sets it apart from the other red-marked species, corrugatus and fallax. The relationship of sarcosus would appear to be closer to conspicuus than to any other species of the Stenoradsia group from the West Coast. It must be a rare species, at least in California. Authentic specimens have not been examined.

Collecting Records: Portuguese Bend, near San Pedro, California (T.S. Oldroyd coll.) Off San Martin Island, Lower California (F. Baker, coll.).

Note: The author will be grateful to have his attention called to any errors of fact or of opinion in this section, of the review of the Polyplacophora of the West Coast of North America, north of Mexico. These will be corrected in an addendum, along with any additional valid collecting records, which it is hoped will be submitted by those interested, so that the review will be as complete and up-to-date as possible.

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The above paper is Part 2, Part 1 having been published in the Minutes , No.66, pp. 3-16, Jan.-Feb.,1947. The rest of the Ischnochitonidae will be published at a later date.

MINUTES 146
MARCH-APRIL 1955
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

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The American Malacological Union Pacific Division will meet this year on July 15-16 at Stanford University. For further information write Mr. Ralph O. Fox, 1048 Monterey Ave., Berkeley 7, Calif.

Those interested in giving papers write the program chairman, Mr. Allyn G. Smith, 722 Santa Barbara Road, Berkeley 7, Calif.

Additional information will appear in the next issue of the Minutes.

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There has been a slight change in the time and place of the 1955 meeting of the American Malacological Union in the east. Instead of at the American Museum of Natural History in mid-August as announced, the meeting will be held at Wagner College on Staten Island, N.Y., July 26-29. The local committee of the New York Shell Club is busily planning a most attractive program which will be sent to all AMU members in May.

Japanese Acmaeid Limpets

by
Tadashige Habe
(Zoological Institute, Kyoto University; Kyoto, Japan.)

Seventeen species of the Japanese Acmaeid limpets are reported in this article. They are classified into four genera and eight subgenera as follows:

A. Formula of teeth 2(2-1-0-1-2)2 -- Patelloida Quoy et Gaimard 1834.
    (1.) Shell usually with 7 strong ribs; egg dark green... Collisellina Dall 1871.
    (2.) Shell large, thick and smooth, or weakly ribbed... Chiazacmea Oliver 1926.
    (3.) Shell small, thin, semitranslucent and smooth, or weakly ribbed, egg green... Asteracmea Oliver 1926.
B. Formula of teeth 1(2-1-0-1-2)1... Collisella Dall 1871.
    (4.) Shell rather large, smooth or strongly ribbed, inner surface white... Collisella s. s.
    (5.) Shell rather small, smoother, weakly ribbed, inner surface whitish blue, egg reddish purple...Conoidacmea Habe 1944.
    (6.) Shell small, usually with 15 to 25 strong white ribs, with reddish brown intervals, inner and outer surfaces same in coloration, egg reddish purple... Kikukozara Habe, 1944.
C. Formula of teeth 0(2-1-0-1-2)0 ... Notoscmea Iredale 1915.
    (7.) Shell rather low, usually covered densely with weak riblets, inner surface whitish purple or bluish, egg green...Notoacmea s.s.
D. Formula of teeth 0910101090k0k0k ...Acmaea Eschscholz 1830.
    (8.) Shell rather large, solid and high, with strong ribs interspersed with weaker ones, outer surface cream yellow, inner niveous white ... Niveotectura Habe, 1944.

A List of the Japanese Acmaeid Limpets.

1. Patelloida (Collisellina) saccharina (Linne)
    (a.) P. (Collisellina) saccharina lanx (Reeve)
2. P. (Chiazacmea) lentiginosa (Reeve)
3. P. (Chiazacmea) striata Quoy et Gaimard.
4. P. (Asteracmea) pygmaea (Dunker)

This species has been admixed with Collisella heroldi (Dunker) by many authors, but it can be differentiated from the latter by the following features:

Shape of aperture in typical forms; P. pygmaea, elliptic; C. heroldi, oval.

Color of inner surface of shell; P. pygmaea, white; C. Heroldi, whitish blue.

Color of sole of the animals; P. pygmaea, greenish white; C. heroldi, white.
Formula of the teeth and color of the egg are given in the preceding key.

4.A P. (Asteracmea) pygmaea lampanicola Habe.

Shell small, thin semitranslucent, highly conic and marked with black radiating bands and brownish reticulations on the yellowish ground; apex rather pointed and situated somewhat in front of the middle; anterior and posterior slopes somewhat convex, the latter being more convex than the former; aperture elliptic, longer than broad, surface with fine radiating lines and more obsolete growth lines, inner surface whitish except dark brown muscle area.

Major axis of aperture 7.8mm., minor axis 6.4mm., height 4.9mm. (type specimen) Type locality: Tanabe Bay, Wakayama Pref...Honshu.

Remarks: Dunker's Patella conulus with a distinctly expanded aperture and whitish blue inner surface, seems to be only a form of Collisella heroldi (Dunker) as has been pointed out by Lischke. This species has hitherto been identified erroneously with Patelloida conulus (Dunker) and seems to be an ecological variety of the preceding species, attached on the shell surface of lampanid or cerithid species.

5. Collisella (Collisella) pelta (Eschscholz)
6. C. (Collisella) grata (Gould)
7. C. (Conoidacmea) heroldi (Dunker)
8. C. (Conoidacmea) luchuana (Pilsbry)

Although this species is allocated in the family Patellidae, the radular formula is of Acmeid type, to be transferred to this family.

9. C. (Conoidacmea) oyamai Habe

This is the smallest acmaeid species in Japan, with the white, solid, conic shell, on the surface of which radiates reddish rays.

10. (Kikukozara) langfordi Habe

Shell small, conic, with a rather pointed apex a little anterior to the middle; surface usually with 20-25 roundly swollen, whitish radial ribs of which stronger ones alternating with weaker ones, the former beginning very near the apex, intervals of ribs excavated and dark brown; aperture elliptic and crenated by the strong ribs; inner surface yellowish white dark brown radial patches, muscle area dark brown.
Major axis of aperture 8.3mm., minor axis 7.0mm., height 3.9mm.(type specimen)
Type locality: Shirahama, Wakayama Pref., Honshu.
Remarks: This species may be distinguished from "Patella" lacunosa Reeve by the stronger and more numerous ribs with much narrower intervals and also by the coloration of the inner surface. Acmaea langfordi Schwengel is preoccupied by this name in 1944. The radula formula of Acmaea corticata Hutton shows it to be a member of Patelloida.

11. Notoacmea (Notoacmea) schrenckii (Lischke)
12. N. (Notoacmea) concinna (Lischke)
13. N. (Notoacmea) fuscoviridis Teramachi
14. N. (Notoacmea) gloriosa Habe
15. N. (Notoacmea) emydia (Dall)

Key to the above five species:
Shell greenish, whitish blue inner surface. Aperture elliptic, apex situated near the anterior margin...N. Schrenckii Aperture broadly elliptic, apex about midway between the anterior margin and center.
Shell uniformly green, inner margin colored in blackish brown...N. concinna
Shell ornamented with yellow blotches; inner margin alternating yellow with black in coloration... N. fuscoviridis
Shell reddish purple, inner surface purplish white. Shell rather small, thin and with closely tesselated marking, aperture rather elliptic, apex somewhat in front of center... N. gloriosa
Shell rather large, solid and with coarsely tesselated markings, aperture broadly elliptic, apex a little anterior to the center... N. emydia

16. Acmaea (Niveotectura) pallida (Gould)
17. Collisella (?) sybaritica (Dall)

Until the anatomical studies are done, the generic position of this species is quite uncertain.

MINUTES OF CONCHOLOGICAL CLUB, FEB. 1, 1955

The regular meeting of the Conchological Club was called to order at 7:30, February 1st, in the Hancock Memorial Foundation by Pres. John Fitch. Members of the Club and friends from the Pacific Shell Club and the Long Beach Shell Club were guests of the Foundation, for the showing of a motion picture.

The Treasurers report was given and the minutes were accepted as read.

In regard to our first Field trip of the season, Mr. Fitch announced that everyone would be welcome to join us this Sunday, February 6th, at Alamitos Bay. Collecting will be concentrated on finding something good to eat, clams, chiones, etc., so bring along a rake or shovel, and a Fishing License!

Mr. Emery Chace called our attention to Applied Systematics, "The Usefulness of Scientific names of Animals and Plants", a publication by Dr. Schmitt, head curator of the National Museum, 1953. This may be obtained by writing: Supt. of Documents, Natl. Museum, Publication #4158 pp. 323-337.

Dr. Mattox reported that in a recent visit to the Hancock Foundation and Southern California, Dr. Schmitt has been pushing forward efforts to have published in color Dr. McFarlands' book on Nudibranchs, together with his wife's illustrations. At the same time, Dr. Mattox, as prggram chairman, gave us a brief resume of the interesting programs in store for us: March: John Burch will discuss the Muricidea. April: Dr. Hurley, Biologist connected with the government of New Zealand will talk and show pictures. May: A speaker from the Loma Linda School of Preventive Medicine will talk on poisoning from Heterodonax from the Gulf of California. Of course we are all looking forward to a report from our Secretary, Damon Burford as soon as he returns from his trip with the Fish and Game Dept. down the Coast of Baja California and the Gulf of California.

Jean Wilkins, President of the Long Beach Shell Club, extended an invitation to attend the regular meetings of the Long Beach Club the 2nd Sunday of every month at 2:30 P.M. in the Main Library of Long Beach located at 1st and Pacific. Mr. Fitch is to be the speaker February 13th and will discuss the activities of the Fish and Game Dept. Mr. Crawford Cate, President of the Pacific Shell Club, was introduced. He also extended an invitation to attend the regular meetings of the Pacific Shell Club which meets the 3rd Sunday at 2:30 P.M. on the ground floor of the County Museum at Exposition Park. Programs for this group are concentrated on learning more about shells through discussion and slides. The next meeting will be February 20th.

The meeting was then adjourned and the program for the evening was presented. Dr. Garth of the Foundation was unable to be our narrator due to illness in his family. But Dr. Mattox took over in a very able manner. First, he drew our attention to the photographic murals which decorate the Hall, beautiful composite pictures of the Galapagos Islands in sepia tones, including a picture of the Foundations floating Laboratory, the Valero. Then through the medium of colored movies, we acutally joined on a cruise of the Valero III from Tehuantepec Bay to Bort of Spain in Trinidad. With added descriptions from Dr. Mattox, we traveled through the locks of the Panama Canal, visited the famous, pure strain, San Blas Indians. On the Island of Trinidad, we saw not only the asphalt lake, and the Botanical Garden, but joined in a real shell expedition out on a reef at low tide.

We are indebted to the Hancock Foundation and Dr. Mattox for the showing of this interesting and fine movie.

Respectfully submitted,

Florence Thurlow, Sec. pro. tem.

NEW PUBLICATIONS

In 1953 a book was published in Japan: Biological Studies on the Propagation of Japanese Abalone (Genus Haliotis) by Takashi Ino. This work was so excellent with 34 fine plates that it has been in great demand although the text is entirely in the Japanese language other than a brief summary in English. This cloth bound work is still available in limited numbers. The entire printing consisted of but 500 numbered copies. Cloth bound $5.00.

This is the announcement of the conclusion of a combination of efforts that might well be extended to other valuable contributions now available only in foreign languages.

The above book has been translated in its entirety into English. The Shell Oil Company, through its Grant for Fundamental Research at Stanford University, has made possible this translation,one that should be valuable to biologists,zoologists, and to paleontologists because it represents a basic study of ecology and development in an invertebrate group. Credit is also due to the State of California Department of Fish and Game, Marine Fisheries Branch, for supplying and cutting the mimeograph stencils-- no small contribution.

Mr. Taro Kanaya, a graduate student in the School of Mineral Sciences at Stanford University, has done most of the work of translation,except for assistance in Chapter IV of Miss Yoko Ishizaki and Mr. Yoshihiko Shimazaki, also Stanford Students.

The completed translation in 118 pages was then turned over to John Q. Burch with the understanding that the work should be printed and sold at cost/ The result is that this booklet in mimeograph form, stapled together with heavy covers is now offered to those interested for $1.00 postpaid.

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Marine Shells of the Western Coast of Florida by Louise M. Perry and Jeanne S. Schwengel. This fine work was published by the Paleontological Research Institution, Ithaca,N.Y. first in 1940, reprinted in 1942 but it has been long out of print and in great demand.

This 1955 edition has been completely revised by Dr. Jeanne S. Schwengel. The illustrations are by W. Hammersley Southwick, Axel A. Olsson and Frank White. The photographic plates in this work are excellent , and the latest nomenclature by Dr. Schwengel will make this one of the most valuable books in any conchological library. $7.00

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Zoological Record, Vol. 89, Sec.9,1952- Mollusca compiled by A.E. Salisbury, A.M.I.E.E. Published by the Zoological Society of London Nov.,1954- price ten shillings $1.50. This part consists of 108 pages and is, of course, indispensible to all serious workers.

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Basteria Vol. 18, No.4, pp 45-72, 30-XII-1954- This issue contains C.O. Van Regteren Altena: Description of four new species of Plio-Pleistocene Prosobranchia from the Netherlands, and proposal of a new name for a fifth species. A.C. Van Bruggen: Notes on South Africa marine Mollusca 3. Some remarks on species of Sunetta & Donax. C.O. Van Regteren Altena, A. Bloklander en L.P. Pouderoyen : De fossiele schelpen van de Nederlandse stranden en zeegaten; L.J.M. Butot: Planorbis exustus Desh. and Amerianna carinata (Adams) in Java.

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Proceedings of the Malacological Society of London- Vol. 31, part2, 31 Dec.,1954 This issue contains the following papers: Notes on the Ecology and Annual Cycle of Carychium Tridentatum at Box Hill By J.E. Morton-- Taxonomic Notes on Isognomonidae and Bakevellidae by L.R. Cox -- The Larva of Pareledone nigra Hoyle from South Africa by W.J. Rees--On the Status of the Generic Names of the Nudibranch Genera Catriona,Cratena,Hervia,Rizzolia and Trinchesia by William Macnae-- New Name for a Pakistan Eocene Lamellibranch by F.E. Eames-- Vitrina (Guerrina N. Sect.) cuticula (Shuttleworth) and Its Relations by Nils Hj. Odhner--Living Species of the Pelecypod Family Trapeziidae by Alan Solem.

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Life History of the Japanese Ivory Shell,*Babylonia japonica* (Reeve) and its Propagation Method by Takashi Ino (Kominato Marine Biological Laboratory, Tokyo Fisheries College) May,1950.
** The life history of this animal is strange and remarkable.

Turbo cornutus Solander by Takashi Ino- (reprinted from Bulletin of the Japanese Society of Scientific Fisheries, vol.19, no.8, Aug.,1953

American *Haliotis kamtschatkana* and the Far Eastern *Haliotis kamtschatkana* by Takashi Ino (Reprinted from Bulletin of the Biogeographical Society of Japan) v 15, no.1,pp 39-41.

Dr. Ino has shown that the true *kamtschatkana* Jonas (1845) which inhabits the American coast is very different from the species formerly grouped under this same name from the Far East.

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The Wasmann Journal of Biology, Fall,1954 contains a number of large and very interesting papers.

A Study of Some Factors Affecting the Bottom Fauna of a Portion of the San Francisco Bay Estuary by Francis P. Felice.

Observations on San Francisco's Last Major Sand Dune, With Notes on Its Flora and Insect Fauna by Carlos E. Kaufeldt.

The Sea Anemones of Central California Part I. The Corallimorpharian and Athenarian Anemones by Cadet Hand.

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Circulares Del Museo y Biblioteca De Zoologia De La Habana-Editor M.L. Jaume, 13, No. 351, Vedado, Habana,Cuba Precio $1.50 por 100 pp.

A great deal of very valuable information is being published in this mimeographed journal. The work of d'Orbigny is being continued reprinting Los Moluscos De Cuba ... Por Alcides d'Orbigny. It is true that now they contain many papers on other groups of study-mammals,insects etc.

****

New York Shell Club Notes - No. 11, Jan.1955 contains some material of interest- The Family Naticidae in New York by M.K. Jacobson is well done. No. 13, March,1955 figures and discusses *Tibia delicatula* Smith. I have never seen a specimen although I have most of the other species discussed. The Family Nassariidae in New York is another of the type of papers we like to see.

''''''''''

Hawaiian Shells News Nos. 3,4 and 5- Jan.,Feb. and March. Fine papers, full of news and coming out on schedule.

Each issue contains many papers of genuine interest , and the discussion of certain species and genera of their own fauna will certainly be reference material in time to come.

Mr. John Fitch, president, called the meeting to order at 7:30 PM, and welcomed all present.

Mrs. Brooks, treasurer, reported a paid membership of forty-three at this time.

Mrs. Rose Burch, hostess, introduced the guests of the evening.

Dr. Mattox reported that a recent decision of the International Committee has replaced Volsella with Modiolus.

John Burch announced that the translation of Dr. Ino's book on Haliotis has finally come off the press and copies are now for sale. Exchange students at Stanford University translated this work and California Department of Fish & Game cut the stencils with John Burch doing the printing.

John Fitch announced that he will be absent at our April meeting as he expects to be several hundred miles below Cape San Lucas at this time. He should be in attendance at the May meeting as their schedule calls for docking on that day.

Rose Burch brought the shells dollected by herself at the recent field trip. She has suggested that others do the same after future trips so that group comparisons may be made.

Our next field trip is to be held on Sunday, May 22nd. Mr. George Kanakoff will lead this expedition to the fossil beds at Newport Bay. We will be glad to have this opportunity for such fine leadership and look forward to finding many interesting specimens.

Dr. Hurley, a New Zealand government biologist, is to be guest speaker at the April meeting. The subject was not announced.

Mr. John Q. Burch was introduced as speaker of the evening. He chose as his subject, "The Muricidae". He further expanded this subject by discussing primarily the generic differences to be found in this family. (As a correction, I might add that he limited himself to those genera of the Western Americas.)

I will not attempt to report further on his subject because it was rather technical and should be printed in full in the "MINUTES" to be fully appreciated.

However, we did get into a discussion about Phylonotus and as to why our Western American Species might better fall into the genus Muracanthus. As brought out by the speaker, the great difference in the number of varices should allow for this.

The meeting was adjourned at 9:30 PM to allow the group to examine the many fine specimens brought from the Burch collection to illustrate the speaker's subject.

D.L. Burford, Secretary

The Burches were happy to have as their house guest for several days Dr. Ino of Japan, who has been working at Stanford University and the California Academy. He was passing through our city on his way east but we expect him to return soon for a longer stay in Southern California to continue his work with the Haliotis.

We enjoyed a visit from Mr. and Mrs. Willard Mohorter of Cincinnati, Ohio as they were passing through on their return from an extensive tour of Australia, Fiji etc. etc. It is our misfortune to be so far away when the boxes of shells are opened on their return.

Dr. G. Dallas Hanna of the California Academy of Sciences will assume the directorship of the Arctic Research Laboratory, Point Barrow, Alaska, for a six month period this summer. The laboratory is operated by the University of Alaska under contract with the Office of Naval Research. As director Dr. Hanna will supervise some 20 to 30 separate research projects. The various projects will include work in the fields of botany, geology, geophysics and zoology. " Doc" will also continue his work of last summer (an investigation of the geology of the ocean floor in the vicinity of Point Barrow). Dr. Hanna's wife, Margaret, a scientific artist, has been named illustrator for the project.

Mr. A. Hyatt Verrill of Chiefland, Florida died last November. His many published books will remain a great monument to a fine student of nature. He possessed the rare ability to write scientific facts in a manner that would hold the interest of his readers from cover to cover of his books.

We are flattered to have the following letter from Dr. Paul Bartsch, Lorton, Virginia " Your Minutes 144 is a fine number. The article by Maye and Florence Thurlow should prove of great help to beginner malacologists.

Your article about Willett and his reaction to mis-stated locality data presents a most important problem and recalls an experience I had many years ago, at the U.S. National Museum, which I think you might cite in your minutes.

There were brought to me a large collection of small shells for identification which had been gathered on the beach at Fortress Munro, Virginia. Here the owners spent two summers beachcombing while the husband was recovering from a paralytic condition of his lower extremities. Being thus handicapped, they found an outlet for their mental activities by picking shells from the sands of the beach. Great was my surprise to find that the collection consisted almost entirely of Mediterranean species. The collector status precluded a wilful misstatement of locality.

Investigation by the collectors subsequently revealed that the waters off shore from this beach were the official dumping ground for ballast sands, and wind and waves had brought them ashore.

I call attention to this to show that impossible locality citations may not always be a wilful effort of the collectors."

*** Dr. Bartsch's letter reminds me of the time a good many years ago when my son and I collected a large number of small shells on the shore of Terminal Island, San Pedro, Calif. In this material we found many Japanese species much to our surprise. The answer was the same. Oil tankers in particular would return in water ballast and pump out just off Terminal Island. Others have also found these ballast shells on Terminal Island.

We wish to thank Mrs. Griffith ,Egmont,B.C., Canada for the following note " Also in that issue I note your question (when speaking of " Notes on Spermatozoa")-- " What is O. rivularia ?". Probably you have the answers by nowbut I thought i'd mention that I have a specimen of Ostrea rivularis obtained from Dr. Quayle of the Provincial Shellfish Laboratory. It was grown in Puget Sound. I am told that a number of them regularly show up among the seed oysters from Japan, but they do not naturalize and multiply as the O. gigas do. They a re lighter in color both inside and out, less frilled and flatter and thinner than O. gigas."

A note from Bob Talmadge, Willow Creek,Calif. " Found a dandy medium to act as a background for colored slides on most Haliotis specimens--- Wet a piece of wrapping paper to break up the gloss, put the shellon it in full sun light, and shield with a semi opaque plastic and then shoot. This cuts down the gloss, breaks up the shadows, and cuts down on the bright reflections. Color film is rough unless one has enough light.. Then unless something is used to cut the glare, the colors do not come out as they should. Wrapping paper is easy to obtain and when it is wet the glare is gone and it will cling to a bit of plywood for support."

The Museum of Natural History of Santa Barbara, Calif. has opened a new wing to be known as the Marine a nd Geology Halls.

We hear very little about the work of the Soviets in natural science but that they are active is obvious from the occasional article received. The Los Angeles Times a short time ago carried an account " Specimens of sea animals have been raised from 5000 feet beneath the Arctic Ocean by Soviet scientists drifting on an ice floe near the North Pole, Tass, the official Soviet news agency reports.
A radio report quoted by Tass from the station, North Pole No.4, said that the temperature of their floe had fallen to 54 deg. below zero(Fahrenheit). It also said the ice floe which has drifted more than 1000 miles since the station was established seven months ago, has been reduced considerably in size as a result of intensive pressure in an ice field.

Another clipping from the Los Angeles Times gives an account of " A beautiful pink pearl from East Pakistan has just been presented to the Smithsonian Institution by His Excellency Mohammed Ali, Prime Minister of Pakistan, to become a permanent addition to the priceless gem collection of the United States National Museum.

Note from Mrs. Margaret Teskey, A.M.U. secretary. " Did I say that I am leaving Buffalo, for awhile anyway? Mr. T. has been transferred to Menominee,Michigan. We are leaving in a week or two. My address until I get dug in will be c/o Buffalo Museum of Science; they have kindly consented to handle distribution of our new publication."

Karl W. Greene in his interesting articles in the Honolulu paper has written a very clear explanation of the case for Cypraea granulata Pease for the Hawaiian species rather than the Cypraea madagascarensis Gmelin, a name under which it has long been known. The preponderance of opinion is that Gmelin's species was in reality C. nucleus and could very well have originated from Madagascar.

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MAY 1955
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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AMERICAN MALACOLOGICAL UNION,PACIFIC DIVISION- Eighth Annual Meeting
Date: July 15-16 (Friday and Saturday).
Registration of members and guests will atart Friday morning at 9.00 A.M.
Place: Department of Geology, Stanford University,Stanford,Calif.
Reservations: Must be made by July 8. Send them to Dr. Myra Keen, Department of Geology, Stanford University,Stanford, Calif. Single and double rooms are available, and can be occupied on Thursday evening. Rooms must be vacated by 8:30 on Sunday. Please specify number in party, and if man and wife etc.
Rates: $3.00 per night.
Meals: Can be obtained from several different places on the campus.
Annual Banquet: Will be held Friday evening, July 15th, $2.75 per plate. When making reservations please state your intentions in this matter.
Program: Program Chairman Allyn G. Smith must have your paper subjects and equipment needs by May 20. 772 Santa Barbara,Berlely

AMERICAN MALACOLOGICAL UNION-TWENTY-FIRST ANNUAL MEETING

Date: July 26th through July 29th,1955, Registration 9:30 A.M. to 12:00 noon,July 26th. Meeting of executive council,7:30 P.M., July 26th.

Place: Wagner College, Grymes Hill,Staten Island, New York

Accomodations: New college dormitory where families,couples and single parties will be comfortably housed.

Rates: $3.00 per day. Meals served in college cafeteria at reasonable rates. Registration fee of $1.50 per person will cover all tips and incidentals. Annual dinner, Friday, July 29th, 7 $2.75.

Registrations should be sent as soon as possible to Mr. Morris K. Jacobson, 455 Beach 139th St.,Rockaway Beach 94, N.Y. Specify the number of persons in your party and whether you desire sleeping quarters for Buly 25th. If presenting a paper, supply title, time requires and the type of projecting equipment required. Titles received after July 10th will not appear on the printed program.

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Conus litteratus L.

Recently in checking in a large freight shipment from the Philippines, I ran across rather a large lot of shells that I felt compelled to label *Conus litteratus* L. in spite of the fact that they were totally lacking both of the more consistent characteristics of this species. Thinking they might be of interest to him I simply mailed a few of them to Mr. Karl W. Green of Honolulu,Hawaii who makes a specialty of the family. The following is part of a personal communication from Mr. Green about them.

" Three juvenile *C. litteratus* L. and the Kira book received. I think the book is super ..... Thanks for the three shells, and I think you have them named correctly, but I will admit that all the markings are not there. I am aware that authorities disagree on *Conus litteratus* and *Conus leopardus*, if you recognize Roding, otherwise *C. millepunctatus*, although I think this last name is on the way out. Dr. Morrison told me that the black blotvh inside the inner lip near the columella on *C. litteratus* is not always present, although I have never seen it on *C. leopardus*. Also the yellow bands are not present, but if they lack the bands they have the black blotch. I have studied our local shell quite thoroughly- scores of them,and compared them with all the *C. litteratus* I could get my hands on with the result that I have evolved a home made description of the two which seems to work. The only trouble is that one of my most constant signs loses its value in the shells you sent me. That characteristic is the tip of the aperture. All *leopardus* I have seen have a chopped off appearance at the base. In other words if you places a ruler across the base on *leopardus* it would touch the shell from the columella to the edge of the outside lip, an appreciable distance, whereas on *litteratus* the tip is rounded and your ruler touches the shell at one brief point. This is not the case in the ones you sent, which rather spoils the rule I have evolved. It would be interesting, however, to look at some of the more mature specimens in your several hundred and see if the outer lip does not join the columella in a curve, the highest point of which is some distance from the columella. I received both *litteratus* and *leopardus* from the east coast of Africa, and this difference was distinctly noticable ,and there was no difficulty in separating them.

Another difference I have noticed: *litteratus* seems to have a definite and invariable interval of white between the black dots

of whatever size that encircle the shell. In leopardus the interval of white varies, being not unusual to have two and three black dots with practically no interval between them, then have a white interval of a quarter of an inch, and on successive rows the black is lined up against the black and the white beneath the white,giving a sort of paneling effect to the color pattern. This will result in a white stripe running from shoulder to base,and a panel of two or three black spots for the same length. C. leopardus also seems to be definitely a thicker heavier shell than C. litteratus, and in general is I think a larger shell. At least in all the comparisons I have been able to make including the African shells mentioned above. Intergrading, however, spoils all rules. For that reason I never like to be too positive. But I am glad to swap this opinion for whatever it may be worth, for the three cones...."

****** I agree with Mr. Green's conclusions and his system will work 99% of the time. However, the dealer or person handling not a few but thousands of specimens may well have problems of his own. Infraspecific variation is very great in many species with the result that we accumulate many odd lots of specimens that we could never mail out with the label we have on them. We are certain that they are at the most ecological races, but they differ so much from the typical that they would be misleading to the student with but a few at hand. However, one has but to consider the obvious fact that in our common dog Canis familiaris the small fluffy Pomeranian, Chihuahua etc. bear little resemblance to the Russian Wolf Hound. For that matter man, Homo sapiens varies a bit as we all know, but no one suggests that we are more than one species. I have no fear for the ultimate conclusions of the majority. Obvious common sense will prevail. However, I must admit that I think that at least some of our conchologists would, if they were mammalogists for example, give every kitten in a litter a separate specific name, possibly even generic division.

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Johnsonia-Vol.3, No.33 and 34 now at hand. These issues are The Family Pholadidae in the Western Atlantic and the Eastern Pacific by Ruth D. Turner.

The work is carefully done and will no doubt be accepted,but those who do follow will be obliged to change most of the labels in their cabinets at the moment. As an individual I have given this family no more than passing study, and for that reason feel quite incompetent to criticize in any way,but I for one will have to study the work very carefully to satisfy a host of questions that come to my mind. For a small example I have collected many hundreds, and perhaps thousands of specimens which I have labelled Navea subglobosa Gray,1851 and also those I have labelled Penitella parva Tryon, 1865. I can accept the new name (to me) of Penitella conradi Val. 1846 as certainly having priority over either of the above mentioned if indeed the same biological entity. However, I have always thought that I could easily and quickly separate subglobosa from parva,and it will come as something of a shock to me to have to replace the labels on long series of both of the above (to my eyes) with the single label P. conradi Val. I have no intention of questioning the conclusions of the author,but it will be interesting to find out just why I as well as most others have found this particular group to separate into two, and why we were in error.

Chaceia ovoidea (Gould) is a new genus to contain our well known local species. Names for the E.P. Chaces.

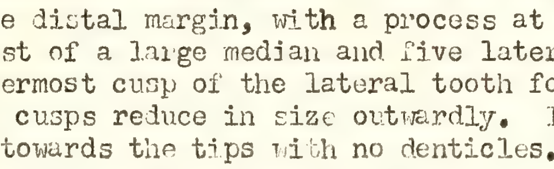
Notes on the Systematic Position of the Genus *Orectospira*, Dall 1925

Tadashige Habe
(Zoological Institute, Kyoto University)

The genus *Orectospira* was established by Dr. W.H. Dall in 1925 for *Basilissa babelica* Dall 1907 from off Honshu, Japan as type and is allocated in the Rhipidoglossate family Trochidae near the genus *Basilissa* to this day. A closely related form to the preceding species, *Echinella tectiformis* was previously described and figured in 1880 and 1886 by Dr. R.B. Watson, by the fractured specimen collected by the Challenger Expedition from off Japan in the Taenioglossate family Littorinidae which seemed not to resemble. Recently I have had the good fortune to have many specimens from the Tosa Bay, Shikoku by Mr. Akibumi Teramachi, and off Owase, Kii Peninsula, Honshu; by Mr. Yukio Matsumoto through Dr. Tokubei Kuroda at my disposal, most of which are referable to *Echinella tectiformis*, some of which resemble *Orectospira babelica* closely as to outline of shell, except for the inner layer of nacreous which is so characteristic to the family Trochidae.

Dr. H. A. Rehder of the U.S. National Museum took the trouble to examine the type specimen preserved in that museum, and told me in a letter that he found no nacreous layer on that shell. Through his kind information, I have come to believe that it may belong to one of the Taenio-glossate genera, and so approach closely to *Echinella tectiformis* in the same genus. Fortunately I received the animal dried in the slender shell; which seems to be an unnamed form of this genus, and the radula of which I examined. The Central tooth is trapezoidal in shape, and the base is broader than the distal margin, with a process at the basal corner on each side. The cusps consist of a large median and five lateral ones which reduce in size outwardly. The innermost cusp of the lateral tooth forms a strongly projecting spur and the other 5-6 cusps reduce in size outwardly. Inner and outer marginals are long and attenuate towards the tips with no denticles.

From this observation, it would seem that this genus has close relationships with the Turritellidae in the shell form, and the multispiral operculum as well as radular formula, and differs from that family in having the columella notched and the perforated umbilicus in some forms. On the other hand it somewhat resembles the Vermetidae; which is the sessile form, in the features of operculum. Therefore, in choosing with which family the *Orectospira* should be most properly placed, I should select the Turritellidae, under whose family a new subfamily Orectospirinae may be established for the species group of this genus.



In Minutes 146, page 2 please correct the item D. Formula of teeth... to read 0(1-1-1-0-1-1-1).

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
April 5, 1955

Dr. Mattox, Vice-president, called the meeting to order at 7:30 PM, and welcomed an attendance of thirty to our April meeting.

Mrs. Brooks, Treasurer, reported on a paid membership of forty-six for the present year.

Rose Burch announced the official date of the AMUPD meeting as July 15 and 16. Information as to reservations will be announced next month.

Dr. Mattox informed the group that Dr. Ino of the Tokai Regional Fisheries Laboratory of Tokyo, Japan, will be guest speaker for the June meeting. Dr. Ino is known to most of us for his most detailed and comprehensive work with the Haliotis of Japan. This scientist is a malacologist as well as a conchologist and I am sure that all members who are seriously interested in taxonomy, will profit from this speaker.

Mr. and Mrs. Emory Chace announced the celebration of their 50th wedding anniversary to be held on the 24th. of April. An invitation was extended to all their friends to visit with them on this occasion. The best wishes of this organzation on such an event and many more anniversaries to come.

Mrs. Brooks gave a short report on their trip to the Hawaiian Islands. Collecting was not too good, but an enjoyable time was had , and I for one, would like to see the pictures Mr. Brooks took in the Islands. For the benefit of those uninformed, Mr. Brooks is an excellent photographer.

Your secretary was called on at this time to give a report on a recent trip to the Gulf of California.

This trip to the Gulf was made on the "Yellowfin", one of the laboratory vessels of the California Dept. of Fish and Game. Our primary purpose was to tag "Yellowtail" and in conjunction, to explore the Gulf.

Hampered by windy weather and cold water, our Gulf part of the trip was cut short and most of the time was spent on the outer Coast of the Peninsula. However, the few spots collected yielded a representative cross-section of the fauna to be found in this most prolific collecting ground.

I would like to go on record as agreeing with Mr. John Steinbeck, author of the "Sea of Cortez", as to Puerto Escondido being one of the best spots in the Gulf for collectors. The many varied types of habitat that are found in a small area account for this.

I would like also to thank Mr. John Fitch, Assistant Director of the Terminal Island facility, and Mr. Robert Collyer, Biologist-in-charge of trip, for their selecting me as an aid on this expedition. Also, I wish to state that the crew of the "Yellowfin" was most cooperative, and one of the finest groups of men I have associated with.

The meeting was adjourned at 9:30 PM to allow the group to examine some forty or fifty species of Molluscs collected on this journey.

D. L. Burford, Secretary

Publications Received

The Nautilus- Vol. 68, No.4,April,1955. The following papers are in this issue: Heterurethrous and Aulacopod by H. Burrington Baker; A rectification of Pecten nomenclature by Gilbert Grau; An analysis of the arctic marine pelecypod fauna by David Nicol; Gastropods of the Brighton area,Wasatch Mountains,Utah by Ernest J. Roscoe and Lottie O. Roscoe; The Titian R. Peale shell collection by R. Tucker Abbott; Elliptio spinosus in the Althamaha River by Ivan R. Tomkins; A new Cretaceous Emarginula by Charles Jetter Eichman; Setaepoma , a new genus in the Synveridae from the Solomon Islands by William J. Clench.

The paper by David Nicol on the Arctic fauna is of particular interest. When studying specimens from Arctic Alaska there is always the question of whether this species or that may be circum-arctic and identical. No doubt there have been studies made but I have never seen to my knowledge a paper based upon a comparison of the species to determine which are trully circumarctic. As a matter of interest I think that a check list of all species from the Arctic would be of great value.

California Fish and Game, Vol. 41, No.2, April,1955.
This issue contains one very fine paper by S. Stillman Berry " On Recent Californian Occurences of the Rare Octopod Ocythoe". The paper is illustrated with one unusually fine full page plate.

Fauna of Akkeshi Bay XXI Pelecypoda and Scaphopoda by Tadashige Habe- Publications from the Akkeshi Marine Biological Station Feb.,1955.
This is a large paper of 31 pages plus 7 full page plates. This work is of unusual interest to us because of the rather sur-prising number of species to Alaska and even farther south on this coast.

Bulletin of the Southern California Academy of Sciences- Vol.54, Part 1, Jan.-April,1955.
This issue contains two papers by S. Stillman Berry " A New Sierran Pulmonate of the Genus Monadenia" and " An Important New Land-Snail from Mission Range,Montana"

Request for the suppression of the generic name " Jumala" Friele, 1882 (Class Gastropoda) as a name calculated to give offence on religious grounds" by A. Myra Keen. Bulletin of Zoological Nomen-clature, Jan.1955

New York Shell Club Notes No. 14, April,1955.
The New York club continue to publish some interesting notes. In this issue Anthony D'Attilio discusses and figures a very rare species Oniscia denninsoni Reeve.

Shells from Komodo Island by L.J.M. Butot- Penggemar Alam,Dec.,1954.
Some fine land shells are figured and discussed

Bulletin Southern California Academy of Sciences Vol. 54,Part 1
" A New Species of Aplysia on the Southern California Coast" by Lindsay R. Winkler- Aplysia vaccaria n. sp. An excellent paper and well illustrated. An addition to our fauna.
Studies in Opisthobranchiata: 1.A New Species of the Gemus Triton-iopsis from Southern California" by N.T. Mattox. Tritoniopsis aurantia n. sp. Another addition to the Californian fauna.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

May 3rd,1955

Mr. John Fitch, President, called the meeting to order at 7:30 P.M. and welcomed thirty persons to our May meeting.

Mr. Fitch informed us of his recent trip and that althpugh, all objectives of the trip were fulfilled, bad weather almost completely eliminated shore collecting and diving.

A reminder was made of the group field trip to Newport Bay to be held on Sunday, May 22nd. Those persons intending to lunch at the fossil beds were urged to meet at the Salt Pond at 10.00 A.M.

Dr. Mattox introduced Dr. Hurley of New Zealand as the speaker of the evening. Dr. Hurley is a government biologist on leave in this country and presently working at the Hancock Foundation.

As Dr. Mattox explained our speaker was not a conchologist, but would have some interesting information for us and some very beautiful color slides of New Zealand.

Dr. Hurley took us by way of his pictures on a visit to his country and also illustrated the five faunal zones of New Zealand.

I am sure that members of the Conchological Club exchanging with conchologists in that country were pleased to see some of the places illustrated that their friends had collected from in their behalf.

It was again announced that Dr. Takashi Ino of Japan will be the speaker for the June meeting. All members should plan to attend what promises to be a most interesting meeting.

The meeting was adjourned at 9:30 P.M. by Mr. John Fitch.

D.L. Burford, Secretary

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ANUAL QUARANTINE OF MUSSELS STARTED- May 12,1955. Dr. Malcolm H. Merrill, State Health Director, today issued the annual quarantine of mussels for human consumption, effective until Oct. 31.

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MINUTES 148

JUNE-JULY 1955

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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The American Malacological Union Pacific Division held probably the most successful meeting in the life of the organization. It was reported that 87 had registered but we were pleased to welcome quite a host of visitors. The papers heard will be listed below.

Officers elected for the ensuing year are:
President: Mr. E.P. Baker, Downey, Calif.
Vice President: Dr. Albert R. Meade, Univ. of Arizona
Secretary-Treasurer: Miss Ruth E. Coats, Carlsbad, Calif.

Inasmuch as most of the papers will be published later either in these Minutes or elsewhere, there will be little sttempt made to review them here.

AMERICAN MALACOLOGICAL UNION -PACIFIC DIVISION
EIGHTH ANNUAL MEETING-STANFORD UNIVERSITY July 15-16,1955

Chairman: Ralph O. Fox, Berkeley, Calif.
Vice-Chairman: E.P. Baker, Downey, Calif.
Secretary-Treasurer: Miss Ruth E. Coats, Carlsbad, Calif.

Allyn G. Smith should be heartily congratulated for the excellent job he did as program chairman. The papers read follow:

Mr. and Mrs. Crawford N. Cate, Los Angeles-
Another Look at the Giant Trophon, *Forreria belcheri*.
Dr. Myrs Keen, Stanford University
A FEW MINOR PELECYPOD GROUPS REVISED FOR THE "TREATISE OF INVERTEBRATE PALEONTOLOGY".
Dr. Myra Keen
Some Rare Books in the Stanford Conchological Library
Dr. Joshua L. Baily Jr., San Diego Society of Natural History
Assymmetry in the *Pecten gibbus* Complez.
Dr. Joseph P.E. Morrison, United States National Museum
How many *Syncera* Species are Living in Death Valley ?
(Read by Dr. Wendell O. Gregg, Los Angeles)
Mr. Robert R. Talmadge, Willow Creek, Calif.
Variation Factors in West Coast Abalones,Genus *Haliotis*.
Dr. Leo G. Hertlein, California Academy of Sciences
Remarks on Some Type Specimens from the Gulf of California Described by A.E. Verrill.
Mr. John Q. Burch, Los Angeles
A Systematic Arrangement of the Rock Shells, Family Muricidae
Dr. Takashi Ino, Tokai Regional Fisheries Laboratory,Tokyo,Japan
Relation Between Diet and Coloration in the Top Shell,*Turbo cornutus*.
Mr. Merton E. Hinshawm Pacific Grove Museum
Denizens of the Monterey Shale
Dr. S. Stillman Berry, Redlands, Calif.
Stanford's Contributions to Malacology
Dr. Rudolf Stohler, Dept. of Zoology, University of California
Demonstration of Plastic Embedding Technique
Mr. Emery P. Chace, San Diego Society of Natural History
Additions to the Fauna of Guadalupe Island, Mexico
Dr. Fritz Haas, Chicago Natural History Museum
The Shell Collection of the Chicago Natural History Museum
Dr. Albert R. Mead, Dept. of Zoology, University of Arizona
Biological Control of the Giant African Snail
Dr. Rudolf Stohler, Dept. of Zoology, University of California
Plans for the Mollusk Collection of the U.C. Dept. of Zoology
Mr. Alan J. Kohn, Osborn Zool. Lab., Yale University and Hawaii Marine Lab., University of Hawaii
Studies on Food and Feeding of the Cone Shells, Genus *Conus*
Mr. Robert Robertson,Stanford University
A Proposed Checklist of the West Indian Mollusks
(Read by Dr. Myra Keen, Stanford University)
Dr. S. Stillman Berry, Redlands, Calif.
The West Coast's Confused and Confusing White Slipper Shells-*Crepidula*, Subgenus *Ianacus*.
Dr. Rudolf Stohler, Dept. of Zoology, Univ. of California
Studies on Mollusk Populations- III

Dr. Joseph P.E. Morrison, United States National Museum
What is *Helix whitneyi* Newcomb ?
Read by Allyn G. Smith, California Academy of Sciences)
Mr. Frank W. Moore, Redlands, Calif.
Death in a Clam Shell
Mr. Keith Cox, California Dept. of Fish and Game
Abalones and the California Department of Fish and Game
Lecture illustrated by Sound Motion Picture in Color)

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Dr. Rudolf Stohler gave a very interesting exhibition of the use of plastic in mounting specimens. I am sure that most of us wish to try it. It looked easy with Dr. Stohler doing it, and the results were beautiful, but he was fair enough to show us one of his failures and like many other things obviously requies practice and skill.

The first paper by Mr. and Mrs. Crawford N. Cate "Another Look at the Giant Trophon, *Forreria belcheri*" was well prepared and well received. We had occasion to be very proud of our members.

Dr. S. Stillman Berry's paper " The West Coast's Confused and Confusing White Slipper Shells- *Crepidula* , Subgenus *Ianacus*," was of interest. Dr. Berry made an excellent case for the theory of using the nuclear whorl for specific differentiation in this genus. Others have attempted this and ended in confusion with them. Dr. Dall thought them not specifically consistent. However, there are no more thorough scholars than Dr. Berry, and when he has completed and published his research, we feel certain of an improvement in our classification.

Dr. Berry's talk at the dinner meeting was a genuine oratorical masterpiece and thoroughly enjoyed by all.

Mr. Alan J. Kohn in his paper " Studies on food and feeding of cone shells, genus *Conus*," presented a very novel study. Few if any of us had considered the possibility that different species of *Conus* might might have different animals for their prey. The talk was well illustrated with slides.

Mr. Frank W. Moore in his talk " Death in a Clam Shell" gave an account of the symptoms and illness that almost resulted in death for his entire partywhile camped on the Gulf of California. They made chowder from *Heterodonax bimaculata* L. that had almost certainly been infected with the poisonous dinoflagellate that causes an annual quarantine and some casualties annually here.

Mr. Keith Cox gave the final lecture illustrated with sound motion pictures in color. It was thoroughly enjoyed. Every detail of the divers work was illustrated as well as underwater pictures of the living animals with which he came in contact. Mr. Cox answered many questions from members present and his program was reluctantly passed to take up other business.

PAPER READ AT AMERICAN MALACOLOGICAL UNION
EIGHTH ANNUAL MEETING * STANFORD UNIVERSITY
July 15, 1955
(Mr. Robert R. Talmadge, Willow Creek, Calif.)

Variation Factors in the Haliotis

Over one hundred and fifty names have been applied in the genus *Haliotis* throughout the world. Needless to say, there are not one hundred and fifty known species; the actual number is probably less than one hundred valid species and subspecies. Some are represented by too few specimens in collections to be properly evaluated.

Certain names are synonyms. Some of these are two descriptions of the same species by separate authors. Other synonyms are by the same author but are based upon indivudual not population differences. During the late eighteenth and early ninteenth centuries, the far ranging exploratory ships brought in a wealth of zoological and botanical material. Most of this was new to the world of science, and at that period of time, the naming of new species was considered more important than any study of the range, ecology, or life history of the species. Thus, it was very easy for a mass of synonyms to be established, not only for the Malacologist, but for other natural sciences as well. Most of the typical synonyms have been properly evaluated. However, a problem still exists. We have a number of names and descriptions in the *Haliotis* for which the general term "Synonym" does not fit. Actual specimen differences are noted and must be acknowledged. These variations from the typical form have a cause, but exactly what that cause is, is a question to ponder. The complete answer is not known, but the following is presented as a possible solution. Incidentally, portions of this break down are utilized in vertebrate zoology, and may be applied to nearly all the families of both the plant and animal kingdoms.

There are certain variations that appear to be consistent in this genus. For want of a better name, I present the term "Variation Factor". At the present time, I have broken these factors down into five basic units. Although certain specimens may exhibit a single factor, others may give indications of two or more. The sequence is artificial and is used for convenience only. Perhaps a later evaluation will produce a more natural separation and/or order of priority.

Radical changes in Growth Stages

Considerable variation may be found between juvenile, adult, and senile specimens of the same species. To this may be added the subadult and semisenile stages, but for clarity the first three are considered sufficient. Generally speaking, the juvenile specimens are more depressed and expanded than adults. The young of our West Coast *corrugata* are excellent examples of this depressed expanded form. All juvenile specimens have a silvery nacre, regardleds of adult coloration. Thus we find the young of the *rufescers*, *corrugata*, *fulgens*, and *iris* have silvery nacre, while their adult counterparts have the rich and highly colored interiors. The muscle scar so noticeable in certain species is lacking in the juvenile stages, not being found until they reach subadult form. The sculpture is often quite distinct and different from the adult. The small *H. squamata* have high, sharp, lamellae that are lost in adult stages. The young *rufescens* lack the wavy tumerations that develop in the adult stages.

Adult shells, used as a basis for comparison, are too well known to go into. These represent the shells generally considered to be the basis of the descriptions.

Senile specimens are deep, round, thick-shelled, and have the sculpture so altered or obsolete that recognition by this means alone is nearly impossible. The nacre is dulled, the coloration restricted to blothces, and stains appear on the once highly iridescent nacre. The muscle scar is enlarged and roughened. In species that one does not normally find these scars present, a scar area is developed. In several cases complete scars are formed.

Variation Factors in the Haliotis, Cont.

With these changes that occur between the young and senile specimens of the same species, it is a wonder that more names have not been presented to the Conchologists. One very fine example of this factor is the *Haliotis midae* from South Africa. Certain highly sculptured juveniles were given the name of *capensis* by Dunker. The name *midae* referred to typical adults, and extreme senile specimens of this Linnean species were given the name *elatiore* by Pilsbry.

Factor of Morphology

The full extent of this factor is still unknown, and here we are entering upon the very basis of specific and subspecific differences. Some of these may be an ecological factor in the broadest sense, or may be genetic in character. In Vertebrate Zoology, there are recognized subspecies tied together by large areas in which the specimens are intermediate or intergradational in features. The distribution of our large western land snail of the genus *Monadenia*, indicates that this same factor is present in mollusks. The exact cause or basis of the subspecies probably will be found in genetics, induced by perhaps a geographical condition. In the *Haliotis* here on our West Coast, we find that the fulgens of California has a rounded, irregular cording. Specimens from southern Baja California have a flat irregular cording. Specimens of the *assimilis* from Baja California are rather deep, elongate, and have a fine irregular cording, wheras the specimens from Monterey are rather flat, ovate and have a much coarser cording. The *varia* of the Ryukus and the *Varia* of Queensland are quite separable in their shape and formation of the tubercles. Specimens from points midway exhibit both features, the strongest feature depending upon their geographical relationship to either of the extremes. More information is needed on this factor before a complete understanding is available. There is no doubt that certain named species will fall into portions of this factor, proving to be geographical races of known species instead of full species.

Factor of Ecology

This factor has caused as much discussion in Zoology as has genetics. We have the terms: "Ecological Race--Ecological Habitat--Ecological Biome". In the *Haliotis* we may find certain colorations and shapes induced by localized conditions, that may repeat again in other stations. Water temperature, algea, chemical composition of the water, or even the actual rock formation upon which this genus lives may alter the specimens enough to be the basis of a name. Certain coves along the Humboldt and Mendicino Coasts produce very flat indivuduals of the *rufesens*, due to the narrow fissures in which they live. Other coves on this same coast produce normally deep shells. Near Gan's Bay in South Africa a mineralized vein enters the sea. The *H. midae* from that region all have a darker flesh and a distinct reddish cast to the shell. Recent specimens taken on the mainland of Southern California indicate that an ecological color phase of the *rufescens* exists in the warmer waters between Point Conception and Punta Banda. Animal and shell differences are not in evidence, but there is a distinct color variation in the shell.

Pathological Factor

This may be divided into two sections. The first is caused by an injury to the shell in the juvenile stages, that creates a monster. Usually these are imperforate, a number of which have been found.

The second section is a genetic mutation. One of the imperforate examples examined gave no evidence of an injury, thus indicating that perhaps a genetic variation caused the mutation. Color phases, not to be confused with the localized ecological colorations, are probably the most common pathological mutation. At times one may find mixed in with normally colored specimens, an individual of contrasting coloration. As the glands in the mantle form not only the shell, but the coloration of the shell, this is a problem for a biochemist. Here on our West Coast we have the reddish brown to orange *rosea* a color phase of the *cracherodii*. The *corrugata* may turn up with indivudual shells of green or blue-green from amid a batch of normal colored specimens. The *vidris*, *concinna*, *semistriata* and others are now known to be color variants of the common *varia* of the Western Pacific.

Variation Factors in the Haliotis, Cont.

Hybridization

Although there is no definite information on this factor being used as a basis for named species, there still remains that possibility. Certain descriptions and names in literature can not be placed with any known species or variation of a species. These may represent hybrids. Hybrid specimens exist, but are few in number. The actual reproductive cycle of the *Haliotis* is such that it would seem quite easy for hybrids to be formed. Such is *not the case*. The genetic separation must be very strong.

Summary

In conclusion, we find that some of the named species of the *Haliotis* although synonyms refer to distinct factors. These factors may be listed as: age, range variation, ecological variation, mutations, and hybrids. A specimen might exhibit one or any number of these factors. These have no standing in systematic taxonomy, but may be referred to as "Formas". However, we must bear in mind that the full picture is not clear or complete, and that perhaps in time additional evidence will change the picture. This is more or less of an interim peport and it is hoped that in time further information may be presented on this rather interesting genus of mollusks.

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Mysella golischi Dall and *Mysella pedroana* Dall
(Personal communication from Mrs. Nettie MacGinitie,Kerckhoff Marine Laboratory, Corona Del Mar, Calif.).

" While I was at the USNM I had an opportunity to examine the types of *Mysella golischi* Dall and *Mysella pedroana* Dall and I find that they are distinct species. In #40, p.15 of the Minutes, the question was raised as to whether these two species are the same. I suppose the matter has long since been determined,but just in the event that it has not, I am sending you this note about it. Dall did make a mistake in saying that the posterior end of *pedroana* is shorter than the anterior end, for it is the anterior end that is the shprter-- just the same as in *golischi*. The umbos are nearer the anterior end in *pedroana* than in *golischi*. The posterior end of *pedroana* is more elongate ahdn the anterior end slopes downward more abriptly than in *golischi*. There is a blackish deposit (oil ?) over the brown periostracum. The type of *golischi* is a left valve that is worn,white and shiny. From personal observation I can say that the periostracum of *golischi* varies from cream-colored to brownish, depending on the age and size of the shell."

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The following is an excerpt from a letter of Professor Trevor Kincaid, Seattle, Wash.

" Your note regarding the nomenclatorial propensities of conchologists, who carry out a system comparable to giving specific and generic names to the individuals in a basketful of pups. They would call a pup with a spot of black on his nose *Doggo* (*Pupicus*) *nasinotatus*, while one with a spot on his tail would be *Doggo* (*Pupino*) *caudonotatus*, et al. One joyful namer of beetles , who described hundreds of " new species", now has about 80% of his brain children reposing in the synonymy. When the shells are gone over by some one who will bring them in line with modern taxonomy the number of species ,as in the case of birds and mammals, will be reduced by about 50%. I noticed recently in a list of insects of the saw-fly group one species with 19 synonyms, all based on the arrangement of color markings. O tempora, O mores. All varieties of the human family are classified in one species under the Linnaean name *Homo sapiens*,but in some cases the *iens* of *sapiens* might well be left off."

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

June 7th, 1955

Mr. John Fitch, President, called the meeting to order at 7:30PM and welcomed an attendance of thirty persons to our June meeting.

Mrs. Brooks, Treasurer, announded an addition of two members, a total of forty-eight for the year. She informed us that a new supply of letter-head stationery is now available at one hundred sheets for a dollar.

Mr. Fitch commented on the recent trip to the Newport fossil bed and Mrs. Burch and Mrs. Brooks brought the specimens they collected on this outing. Mrs. Burch reported fifty-six species identified with a considerable amount of gleanings yet to be worked on.

John Fitch, doubling as fieldtrip chairman, discussed briefly, a three day field trip to be held at Cholla Bay, Mexico this fall. Further details will be announced at the July meeting. This should prove of interest to all members and their families.

Our guest speaker, Dr. Takashi Ino of the Tokai Regional Fisheries Laboratory located in Tokkyo, Japan, was introduced by Mrs. Rose Burch who has been fortunate to have this scholar as a house guest on several occasions this year.

As she explained, Dr. Ino was granted a year of study in this country by the Japanese government to examine our Pacific Coast of America species of Haliotis and the fisheries methods used by us.

Dr. Ino has been the guest at many of our scientific institutions and has just recently returned from a trip to the eastern sea-board where he visited our U.S. National Museum among other places of interest to the scientist.

Pictures taken at the National Museum proved that the type of Haliotis japonica, Reeve 1846 is instead a specimen of H. lamellosa Lamarck, one of the Mediterranean species and to further strengthen the case, attached to the back of the shell was one of the valves of an oyster native to that area.

Dr. Ino showed us about 130 slides explaining and illustrating his most detailed work with the genus Haliotis. Included were several slides clearly showing the epipodial processes of Pacific Coast of America species. As he explained, these processes are the most important means of species identification. I am sure that all members were able to clearly distinguish the difference between the species shown and that such methods should eliminate immediately any question as to identification of species when soft-parts are available.

Needless to say, with the large number of slides exhibited by the speaker, it is impossible to condense the evening's program for the benefit of the readers of the "MINUTES". However, I might take this opportunity of urging everyone to examine Dr. Ino's book, as many of the slides he showed us are incorporated in this work.

The meeting was adjourned shortly after 10:00PM and many of the members stayed to examine the interesting examples of juvenile Haliotis brought by John Fitch and the above mentioned fossils.

D.L. Burford, Secretary

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

July 5, 1955

Mr. John Fitch called the meeting to order at 7:45 PM and welcomed about thirty persons including guests to our July meeting.

In a general group discussion it was decided that the monthly card system of notifying members and prospective guests will be used as in the past. I had decided in the nature of an experiment to dispense with this system to see what, if any, difference would be found in our attendance. Although, our attendance was in line with the past several months, I bow to the wishes of the majority.

Dr. Winer and Mr. Levinson of the William Winer Memorial Cancer Institute, introduced as guests, later in the evening contacted Mrs. Brooks and were enrolled as members. This organization is quite interested in using marine life in their research and plan to have a marine library, several acquaria and a shell collection that should be quite interesting as some dredging is being discussed.

Mr. and Mrs. Crawford N. Cates extended an invitation for a pot-luck dinner at their home on the third Sunday in August. (August 21st.) In the interests of a balanced meal, it might be wise for persons planning to attend to contact the Cates in advance of this date. Their address is 12719 San Vicente, Los Angeles 49, and their phone number is EX-4-3843. For the information of any that have not seen their collection, your time will be well spent in examining a most beautiful array of shells. Incidentally, dinner is to be held at 2:00 PM.

Mr. John Fitch was our speaker of the evening and elaborated on his recent trip with California Department of Fish and Game. This trip covered the outer coast of the peninsula of Lower California and extended to Sicorro and Clarion Islands, some several hundred miles off the coast from Cape San Lucas.

The speaker spent some time at Cape San Lucas investigating a report of Haliotis cracherodii (Black abalone) being taken at this spot. However, a negative find was reported. I had the opportunity earlier this year to cover from the area dove in by Mr. Fitch to the cannery pier, and had no success in finding any trace of these animals either. For the benefit of those concerned, Mr. Fitch remarked after the meeting, that the farthest south he had found this species was Santa Maria Bay which is to the North of Magdalena Bay Entrance.

This trip was hampered by high winds and surf and that what good weather there was, had to be used in taking specimens of fish, this being the primary purpose of the expedition. We were glad that all necessary specimens were taken, making for a successful trip, and we were only sorry that we did not have the opportunity to view another collection comparing with the one brought back by Mr. Fitch from his trip to the Marshall Islands last year.

Many interesting pictures were shown of the peninsula and the different islands visited. It was easy to see the difficulties afforded by the heavy surf when it was quite visible from slides taken several thousand feet above and several miles inland on these islands.

At one spot in the islands, several specimens were collected and as a few Cyprea were included, several members were noticed to be quite nervous, and I can only hope that they will survive until our next meeting at which time Mr. Fitch promised to bring them.

The meeting was adjourned at 9:30 PM by Mr. Fitch.

D.L. Burford, Secretary

NEW PUBLICATIONS RECEIVED

Some Opisthobranchiata Mollusca from Hawaii by Jens Mathias Ostergaard- Pacific Science, 1955, April. 37pp, 17 figs,2 color plates. A well written and beautifull illustrated paper.

Proceedings of the Malacological Society of London- Vol. 31,parts 3 and 4 20th June,1955

Obituary Notice of J.R. le B. Tomlin with a list of his 320 published works on conchology. Mr. Tomlin has on many occasions written us regarding types and other problems, and his name will appear throughout the older issues of these Minutes. He was always free with his friendly advice.

The papers in this issue are:

Vitrina (*Guerrina*) *cuticula* (Shuttleworth). Additional note and correction By Nils Odhner
The occurence of the dibranchiate Cephalopoda *Vasseuria* and *Belosepiella* by Dennis Curry.
The structure and mode of action of the stomach and sorting caecum in *Lunella smaragda* (Gastropoda, Turbinidae) by J.E. Morton
Observations on *Balcis devians* Monterosato by Vera Fretter
Molluscan diets (Presidential Address) by Alastair Graham
Some observations on *Tricolia pullus* by Vera Fretter
The names of the two common species of *Viviparus* by Hugh Watson

The following papers on chitons by Isao Taki are well illustrated and of great value and interest to all students of this group.
Distribution of Mopalioid Chitons in the Pacific- March,1955 Records of Oceanographic Works in Japan
Fauna of Chitons around Japanese Islands- Bulletin of Natl. Science Museum (Tolyo), N.S., Vol. 1, No. 1, (No.34), March,1954.
Fauna of Chitons around Japanese Islands- *Lepidozona* of Japan As above (No.36) March,1955
Fauna of Chitons around Japanese Islands- *Stenoplax* of Japan As above (No.35) Sept.,1954
Molluscan Fauna of Hachijo-Jima-Preliminary Report- Rec. Ocean. Worls of Japan Vol. 1, No. 1
A peculiar chiton from Hachijo-Jima with special reference to its distribution in the Pacific- Rec. Oceanographic Worls in Japan Vol 1, No. 2, New Ser. Published by Japanese National Commission for Unesco.
Description of a new species of *Phenacolepas* (*Ph. nakamigawai*) from Hachijo-jima

Venus- The Japanese Journal of Malacology 18-3,June 1955
Papers in this issue are:
Land Shell Fauna of Yaku Island by Tokubei Kuroda
Pedicularia (*Pedicularìona*) *stylasteris* Hedley var. by Tadashige Habe.

** This is an interesting paper to us because Dr. Habe states that in his opinion the name *Pediculariella* Thiele which has been applied to our California species is but the younger stage of *Pedicularia* or *Pediculariona.* Our species is variable and has several names which may prove to be the same entity.

Anatomy of *Oncomelania nosophora* (Robson) by Hiroshi Itagaki
Umboniibae , A contribution to the Phylogeny of Umboniinae by Katura Oyama
Katelsia (*Nipponomarcia*) *nakamurai* Ikebe by Junji Itoigawa
Systematic Relative Growth in Shells- by Ikuso Hamai
History of Japanese Conchology by Tazima Kanamaru

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AUG. 1955
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor,-John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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This small publication is now entering the sixteenth year under the above name and with John Q. Burch as editor. Before that the publications of the club were printed by the late Jim Marsh and others before him but with other names.

A complete file of the back issues occupy rather a surprising amount of linear shelf space. In retrospect these years have been happy years. We have enjoyed collecting our shells and studying the problems connected with them.

We have actually made a few enemies along the way. This was both gratyfying a nd amusing; gratifying because if we had accomplished nothing we would have been simply ignored, and amusing because it was never a matter of great importance to us who accepted or rejected our work. Of course, we have been in error on many occasions, but the only sure way to avoid making errors is to attempt nothing. The professional critics are always delighted to call attention to an

error made by the great scholars of the past while contributing little or usually nothing themselves. It is something of an honor to be added to such a list.

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DIRECTORY OF CONCHOLOGISTS

We are now assembling the list of the names and interests of all individuals and institutions interested in the study of mollusks. It will be sincerely appreciated if you will write us regardless of whether you are interested in receiving a copy or not. We plan to publish it about January,1956.

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NEW PUBLICATIONS RECEIVED

The Molluscan Land Operculate Genus Liarea By A.W.B. Powell Records of the Auckland Institute and Museum Vol.4, No.5,Dec.,1954. 23 pages and 5 plates showing 40 figures. The work is carefully done with systematic key,expensive locality dats on distribution, and clear notes for fine distinctions.

Observations on the opisthobranch mollusc Aceon tornatilis L. by Vera Fretter and Alastair Graham J. Mar. biol. U.K.33,565-85 A careful and thoroughly illustrated paper on the ecology and anatomy of this species.

Odostomia as a pest of oysters and mussels By H.A. Cole and D.A. Hancock J. Mar. biol. U.K. (1955) 34,25-31

This well illustrated paper is of interest. Many of us have long known that certain species of Odostomia are always to be found associated with certain host species i.e. Haliotis rufescens and fulgens, Kellettia kellettii etc. etc. I for one had always thought of them as being commensal and not as ectoparasites. This paper refers to a study by Fretter & Graham (1949) in which it was shown that members of the family Pyramidellidae are ectoparasites " each species feeding on a particular host, usually a tubiculous pokychaete or a lamellibranch, by piercing the body wall with the bucal stylet and sucking blood, and perhaps tissue debris, by means of the buccal pump. A list of hosts with its specific parasite, was given." This is a similar paper, well prepared,illustrated, and detailed.

In my own collection of several hundred long sets of pyramidellid species from this coast I regret to add that only on a comparatively few have I mentioned the host species. Of course, a good many of my specimens were brought up in dredge hauls from comparatively deep water and later sorted out of the fine material making proper determination of the host difficult. However, I have no doubt that it could have been done had we been observant at the time.

The Functional Morphology of Otina otis, a Primitive Marine Pulmonate By J.E. Morton J. Mar. biol. U.K.(1955) 34,113-150 This is a very thorough study of one of the least known species.

The Occurance at Plymouth of the Opisthobranch Akera bullata, With Notes on Its Habits and Relationships by J.E. Morton and N.A. Holme J. Mar. biol Ass. U.K. (1955) 34,101-112. This is a thorough and well illustrated study of a species of interest in that similar species occur on this coast.

Experiencias previas sobre fijacion de larvas y crecimiento invernal de la ostra (O. edulis) joven en las rias gallegas (NW. de Espana) por B. Andreu y P. Arte P. Int. Biol. Apl. T.19,(1955) Barcelona

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC

by John Q. Burch

(Read before the A.M.U.P.D. meeting at Stanford University, July 15, 1955.)

There will be no effort made in this paper to describe new species nor to settle the status of the many questionable species.

However, the systematic arrangement of this family is in such a state of confusion that it is doubtful if any two collectors agree to any extent. It is hoped that this paper may start a constructive discussion that will ultimately result in some improvement.

I wish to thank Dr. Myra Keen, Dr. Hertlein, Allyn Smith, Mrs. Burch, and others for their advice, but please do not hold them responsible for errors, and I feel quite certain that they will not agree with all of my conclusions.

A copy of this paper will be left on the table with the representative specimens and your criticisms are invited.

The first thing to determine in a discussion of any group of shells is what character or characters are we going to use for differentiation. Authors have used for key characters 1. the number of varices 2. type, shape and size of the spines 3. size and sculpture of the nuclear whorl 4. length and width of the siphonal canal 5. type of operculum 6. form of the animal 7. the radula.

It is unfortunate that these characters are not always consistent. One of them will place the species in one group, another in a different group. They merge at times.

However, most students of the Muricidae agree that the number of varices is the most important single character, others being secondary; but it is necessary to employ all characters possible in order to avoid ending in complete confusion. Many types of spines are known for different species, some completely closed to others entirely open. In some of our species we have a shell webbing between the spines making an undulating plate.

As new whorls are formed the animal absorbs the spines and varices that are in front of the aperture including the apertural side of the siphonal canal, all being rebuilt with the new varix. However, when the canal is recurved, an entirely new canal is built sealing off the old canal. Species that possess more than three varices have a succession of canals that remain in a short spiral, the center of which is the false umbilicus.

This character will be noted in Muricanthus.

The Muricidae perhaps offer more variation than any other group, and it is necessary to study little known details in order to reach any satisfactory conclusion.

Localities are of unusual importance in studying this group. A specimen taken from a sheltered locality may be beautifully frilled and thin, whereas a specimen of the same species taken from exposed rubble may be heavy, thick and almost smooth.

Distinctions that seem apparent with a few specimens in hand disappear when placed in long series.

The great number of genera and subgenera proposed for this family make the group more confusing than most.

The order suggested here is to divide the groups into the superfamilies, Muricinae, Tropheninae, Typhinae, Ocinebrinae, and then arrange the genera alphabetically except that the type genus of each subfamily will come first.

Family Muricidae
Subfamily Muricinae
Genus Murex Linnaeus, 1758 (Type, by subsequent designation, Montfort,1810), Murex pecten = Murex tribulus Linnaeus.

Shell with produced spire; very long anterior canal nearly closed except near the base; whorls usually with three often spiny varices.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Murex elenensis Dall, 1909. Gulf of Calif. to Peru.
Murex recurvirostris Broderip, 1832 Scammons Lagoon to Panama.
Murex recurvirostris lividus Carpenter, 1857 Gulf of Calif. to Mazatlan.

Genus Murex s.l.

Murex incisus (Broderip), 1832 Mazatlan to Guayaquil
Murex lappa (Broderip), 1832 " "
Murex radicatus (Hinds), 1843 Acapulco to Panama
Murex norrissi (Reeve), 1845 Panama Bay

Genus Centrifuga Grant and Gale, 1931 Type (by original designation) Murex centrifuga Hinds.

Shell with three long round tipped spines on each whorl; canal moderately long, tightly closed.

Centrifuga centrifuga (Hinds),1843 Gulf of Calif. to West Colombia
Centrifuga leana (Dall), 1899 Guadalupe Island to Cerros Island

Genus Ceratostoma Conrad, 1837, Hermannsen emend, ml846 (Type) by monotypy), C, Nuttalli

Shell with three frilllike varices to each whorl; tooth like processes on the anterior portion of the outer lip.

Ceratostoma nuttalli (Conrad), 1837 Monterey to Magdalena Bay
Ceratostoma foliata (Gmelin), 1790 Sitka, Alaska to San Diego
Ceratostoma monoceros (Sowerby), 1840 Lower California

Genus Jaton Pusch, 1837 Type (fide Sherborn), Murex decussatus Linnaeus. Shell with varices recurved, not winglike.

Jaton festivus (Hinds), 1843 Santa Barbara, Calif. to San Ignacio Lagoon, Lower California.

Genus Maxwellia Baily, 1950 Type (by original designation) Murex gemma Sowerby. Shell with varices extending across the suture to the periphery of the adjoining volution, resembling architecutral buttresses.

Maxwellia gemma (Sowerby,) 1879 Santa Barbara, Calif. to San Hipolito, Lower Calif.
Maxwellia santarosana (Dall), 1905 Santa Barbara Islands to Cerros Island, Lower Calif.

Genus Phyllonetus Swainson, 1833 Type (by monotypy), Murex imperialis Swainson = Murex pomum Gmelin.

Shell with three or four lamellar varices between which are a few heavy axial ribs; canal short, recurved, partly roofed.

There is no Pacific analogue for this species, all having much more numerous and more foliaceous varices.

Genus Muricanthus Swainson,1840 Type (by subsequent designationHerrmannsen,1847), Murex radix Gmelin.

Shell with numerous foliaceous varices.

Inasmuch as the Pacific Coast group is easily separable from Phyllonotus, and the obvious fact that the type of Muricanthus is the Pacific Murex radix, it seems advisable that we use this generic name.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Muricanthus radix (Gmelin), 1792 Acapulco, Mex. to Peru
" " brassica (Lamarck), 1822 Gulf of Calif. to Peru
" " erythrostoma (Swainson) " "
" " nigritus (Philippi), 1845 Gulf of California
" " nitidus (Broderip), 1832 Magdalena Bay to Panama
" " oxycanthus (Broderip), 1832 Gulf of Calif. to Panama
" " princeps (Broderip), 1832 " "
" " regius (Wood), 1828 Acapulco, Mex. to Peru

Genus *Muricopsis* Bucquoy, Dautzenberg & Dollfus, 1882 Type (by original designation) *Murex blainvillei* Payraudeau = *M. cristatus* Brocchi, 1814.
Shell with many lamellar varices and no other axial sculpture; columella with two broad basal folds; interior of the outer lip with heavy denticles; varices forming scales on the siphonal fasciole.

Muricopsis indentatus (Carpenter), 1857 Mazatlan to Acapulco
" pauxillus (A. Adams), 1853 Gulf of Calif. to Mazatlan
" squamulatus (Carpenter), 1857 Gulf of California
" vittatus (Broderip), 1832 Ecuador
" zeteki Hertlein and Strong, 1951 Mazatlan to Ecuador
= dubius, preoccupied.

Genus *Pterynotus* Swainson,1833 Type (by monotypy) *Murex pinnatus* Wood.
Shell triangular with three fin-like or foliated varices.

Pterynotus (Pterynotus) rhyssus (Dall), 1919 Santa Monica,Calif.
to Todos Santos Bay, L.C.
" " erinaceoides (Valenciennes), 1832
Gulf of Calif., Magdalena Bay to Panama.

Subgenus *Pteropurpura* Jousseaume, 1880 Type (by original designation) *Murex macropterus* Deshayes.
Shell with three varices webb or blade-like, composed of numerous laminae.

Pterynotus (Pteropurpura) carpenteri (Dall),1899 Monterey,Calif.
to Lower Calif.
" " petri (Dall),1900 Monterey,Calif.
" " to Ballenas Lagoon, Lower Calif.
" " pinniger (Broderip) 1833 West Colombia to Peru
" " swansoni Hertlein and Strong,1951
Gulf of California
" " tremperi (Dall),1910 Santa Monica, to San
Diego, Calif.
" " trialatus (Sowerby) 1841.
Bodega Bay, Calif. south to Lower Calif.

Subfamily Trophoninae
Genus *Trophon* Montfort, 1810 Type (by original designation),
Trophon magellanicus (Gmelin) = *Buccinum geversianus* Pallas.

The type of the genus *Trophon* is a robust shell with a very large body whorl, aperture rounded, canal short, open, nearly straight, umbilicus open. It has numerous varix like axial ribs and is also spirally ribbed.

Other species from the same fauna, the extreme south of South America, obviously place in *Trophon* (sensy stricti).

The numerous species ranging northward all the way to the Arctic show the relationship to the genus *Trophon*, but they are separable as groups. Therefore, the only problem involved is whether to give them generic or subgeneric value. If we are disposed to give generic rank to every related group that can be separated by consistent characters, it would seem logical to do so with all of them, or use the

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

name Trophon, and give them all subgeneric rank. Therefore, until advised otherwise we will here consider them genera.

Trophon geversianus (Pallas),1774 Southern Chile

Genus Acanthrotrophon Hertlein and Strong, 1951 Type (by original designation) Trophon (Acanthotrophon) sorenseni Hertlein and Strong,1951.
Shell thin, biconic in outline; spiral sculpture consisting of 2 or 3 rather weak, usually spinose cords below the shoulder on the body whorl and another one a little more prominent on the canal about half way between the upper cords and the end of the canal; axial sculpture of weak axially elongated nodes which are developed into a row of sharp, erect, guttered spines on the angulation of the body whorl. A slight siphonal fasciole is present; aperture smooth interiorly.

Acanthotrophon sorenseni (Hertlein and Strong),1951 Gulf of Calif.

Calotrophon Hertlein and Strong, 1951 Type (by original designation) Calotrophon bristolae Hertlein and Strong.
Strong axial ribs with vaulted scales at the angulation; strong spiral cords and dentate interior of the outer lip separate this genus from Boreotrophon.
Calotrophon bristolae Hertlein and Strong, 1951 Gulf of Calif.

Genus Gray, 1847 Type (by monotypy), Monoceros giganteus Lesson
Shell with varices more or less obsolete, tooth on outer lip very large Chorus giganteus (Lesson), 1831. Chile

Genus Forreria Jousseaume, 1880 Type (by original designation), Murex belcheri Hinds.
Forreria belcheri (Hinds), 1843 Mugu Bay,Ventura Co.,Calif. to Scammons Lagoon, Lower Calif.

Subgenus Austrotrophon Dall,1902 Type (by subsequent designation) Grant and Gale, 1931 Trophon cerrosensis Dall.
The peculiar leaflike laminae seemingly wrapped around the shell clearly characterizes this subgenus. In Forreria s.s. the expanded varices are closely welded to the sides of the whorl and the species is much heavier.
Forreria (Austrotrophon) catalinensis (Oldroyd),1927 Redondo Beach, Calif. Catalina Island and San Pedro in moderate depths.
Forreria (Austrotrophon) corrosensis (Dall),1891 Redondo Beach, Calif. to Cerros Island, L.C.
" " pinnatus (Dall), 1902 Magdalena Bay and Pt. Abrejos, Lower Calif.

Genus Pascula Dall,1908 Type (by monotypy), Trophon citricus Dall.
Pascula citricus (Dall), 1908. Easter Island.

Genus Trophonopsis Bucquey, Dautzenberg and Dollfus,1882 Type (by original designation), Murex muricatus Montagu.
Shell fusiform, with long, slender anterior Canal,axial ribs not developed into prominent lamellae and without long spines on the shoulder of the whorls.

Trophonopsis vs. Boreotrophon
The consensus of opinion for years has been that these are separable following Dr. Dall's work, Proc. U.S.N.M., vol. 24, pp. 533-550,1908. However, the only apparent distinguishing character that I know seems to be the absence of spiral sculpture on Boreotrophon and the presence on Trophonopsis.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

This problem was brought to my attention by the receipt of many sets from Japan that I would have classified as Boreotrophon without hesitation. They invariably arrive labelled Trophonopsis. This led to a more careful consideration of the species in our cabinets with the result that to my eyes I found sets of one species that could very easily be divided between the two generic groups. This being obviously absurd, it is my opinion now that the two are not consistently separable, and that one should be at most a section of the other.

It is true that Dr. Dall did exactly this, but considered Boreotrophon the genus and Trophonopsis a section, but it is very obvious that Trophonopsis Bucquoy, Dautzenberg and Dollfus, 1882 has two years priority over Boreotrophon Fischer, 1884.

Dr. Dall placed lasius = tenuisculptus, scitulus, kamchatkanus, orpheus, stuarti and others in the section Trophonopsis. Dr. Woodring placed lasius in the genus Trophonopsis. Nevertheless, until better advised, it is my opinion that they are one group and the generic name should be Trophonopsis.

Trophonopsis alaskanus (Dall), 1902 Bering Sea & Unalaska Island in 125 fms.
" albospinesus (Willett), 1931 Catalina Island and Redondo Beach, Cal.
" apolyonis (Dall), 1919 S.E. Bering Sea to Todos Santos Bay, Lower Calif.
" bentleyi (Dall), 1908 Redondo Beach to San Diego, Calif.
" beringi (Dall), 1902 Icy Cape, Arctic Ocean to Puget Sound.
" calliceratus (Dall), 1919 Monterey to San Diego.
" cepulus (Sowerby), 1880 Bering Sea & Aleutian Islands.
" cymatus (Dall), 1902 Pribilof Islands, Bering Sea.
" dalli (Kobelt), 1878 Arctic Ocean to Fuca Strait.
" diazi (Durham), 1942 Gulf of Calif.
" disparilis (Dall), 1891 Fuca Strait to San Diego.
" elegantulus (Dall), 1907 Aleutian Islands.
" eucymatus (Dall), 1902 Off San Diego & Catalina Island.
" ithitomus (Dall), 1919 Lynn Canal, Alaska.
" kamchatkanus (Dall), 1902 Western Bering Sea, 100 fms.
" keepi (Strong & Hertlein), 1937 30 to 50 fms. off West Side of San Nicolas Island.
" lasius (Dall), 1919 Southeastern Bering Sea to Todos Santos Bay, Lower Calif.
" laciniatus (Martyn) Chile
" lorenzoensis (Durgam), 1942 Gulf of Calif.
" macouni (Dall), 1910 Port Althorp, Alaska to Barkley Sound, B.C.
" mazatlanicus (Dall) Mazatlan.
" multicostatus (Eschscholtz), 1829 Nunivak Id., Bering to San Pedro, Calif. Also Japan.
" Orpheus (Gould), 1849 Forrester Island, Alaska to Redondo Beach, Calif.
" pacificus (Dall), 1902 Arctic Ocean southward on the west to Kamtschatka & on the east in deeper water to Acapulco, Mexico
" panamensis (Dall) Bay of Panama.
" peregrinus (Dall), 1902 Catalina Island in 16 fms.
" peruviana (Lesson), 1830 Galapagos to Chile.
" rotundatus (Dall), 1902 Off Pribiloff Islands.
" scitulus (Dall), 1891 Pribiloff Ids. to Unalaska Id.
" smithi (Dall), 1902 Pribiloff Ids. to Santa Barbara Ids.
" stuarti (E.A. Smith), 1880 Shumagin Ids., Alaska to San Diego, Cal.
" staphylinus (Dall), 1919 Sitka, Alaskato Coronado Ids.
" tolomius (Dall), 1919 San Miguel Island, Lower Calif.1361
" triangulatus (Carpenter), 1864 Monterey to San Diego.
" tripherus (Dall), 1902 Fuca Strait to San Diego.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Genus Xanthochorus Fischer, 1884 Type (by monotypy), Purpura xanthostoma Broderip. Shell broadly ovate, thick, heavy; whorls rounded; varices numerous, fimbriated, crossed by from six to ten revolving ribs, the interstices crowded with incised revolving lines; spire not much elevated; canal very short, open, straight; umbilicus open; outer lip thick, dentate within.

Xanthochorus boivini (Kiener), 1843 Panama to Chile (Murex horridus Broderip, 1832, non Brocchi, 1814)
" cassidiformis (Blainville), 1832 Galapagos Ids., Chile
" xanthostoma (Broderip), 1833 Chile

Genus Zacatrophon Hertlein and Strong, 1951. Type (by original designation), Trophon (Boreotrophon) beebei Hertlein & Strong, 1947.
Shell characterized by loosely coiled, tabulate whorls, comparatively smooth, faint spiral striae.

Zacatrophon beebei (Hertlein and Strong), 1947 Gulf of Calif.

Subfamily Typhinae

Typhis Montfort, 1810 Type (by original designation), Purpura tubifer Brug. 1792. Eocene, Paris Basin.
Shell with four varices, whorls shouldered with projecting hollow tubes continuous with or between the varices.

Subgenus Typhina Jousseaume, 1880 Type (by original designation), Typhis belcheri Broderip, 1833.
Typhis (Typhina) quadratus Hinds, 1843 Panama to Ecuador.

Subgenus Haustellogtyphis Jousseaume, 1880 Type (by original designation) Typhis cumingii Broderip, 1833.
Typhis (Haustellotyphis) cumingii Broderip, 1833 Panamic Province.

Subgenus Talityphis Jousseaume, 1882. Type (by original designation) Typhis expansus Sowerby, 1874.
Typhis (Talityphis) latipennis, Dall, 1919 Gulf of California.

Subgenus Typhisopsis Jousseaume, 1880 Type (by original designation): Typhis coronatus Broderip, 1833.
Typhis (Typhisopsis) grandis A. Adams, 1855 Gulf of California = T. (T.) Coronatus Brod. 1833

Genus Pterotyphis Jousseaume, 1880 Type (by original designation): Typhis pinnatus Broderip, 1833.
Shell with three varices and tubes per whorl; sculpture present, usually of both axial and spiral riblets.
Pterotyphis (Pterotyphis) fimbriatus (A. Adams), 1854. Gulf of Cal.

Subgenus Tripterotyphis Pilsbry and Lowe, 1932 Type (by original designation): Typhis (Tripterotyphis) lowei Pilsbry, 1931.
Pterotyphis (Tripterotyphis) lowei (Pilsbry), 1931 Panama.

Subfamily Ocinebrinae

Genus Ocinebra Gray, 1847 Type (by original designation), Murex erinaceus Linne
Shell fusiform, with from three to fourteen varices; varices rounded; umbilicus closed; spire elevated; canal moderate, open or closed, turned to the left; outer lip dentate within.

Ocinebra barbarensis (Gabb), 1866 British Columbia to Santa Barbara, Calif.
" beta (Dall), 1919 Half Moon Bay, Calif. to Monterey.
" buxea (Broderip), 1832 Peru and Chile.
" carmen (Lowe), 1935 Gult of Calif.
" circumtexta (Stearns), 1871 Trinidad, Calif. to Ravellagigado Island.
" crassilabra (Gray), 1829 Peru and Chile.
" diomedaea (Dall), 1908 Panama.
" epiphanea (Dall), 1919 Venice, Redondo Beach, Catalina Id., San Pedro.
" exigua (Broderip), 1832 West Columbia.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Ocinebra foveolata (Hinds), 1843 Moss Beach, San Mateo Co., Calif. to Magdalena Bay, Lower Calif.
" fusconotata (Dall), 1919 Monterey to Catalina Island.
" gracillima Stearns, 1871 Monterey to Gulf of Calif.
" hamata (Hinds), 1843 Ecuador and Peru.
" interfossa interfossa (Carpenter), 1865 Semidi Islands, Alaska to Punta Santo Tomas, Lower Calif.
" " atropurpurea (Carpenter), 1865 Neah Bay, Wash. to San Diego, Calif.
" " clathrata (Dall), 1919 Puget Sound, Wash. to Redondo Beach, Calif.
" " minor (Dall), 1919 Catalina Island to Todos Santos Bay, Lower Calif.
" japonica (Dunker), 1860 Washington, exotic, introduced from Japan.
" keenae Bormann, 1946 White's Point to Imperial Beach, Calif.
" lurida (Middendorff), 1849 Forester Island, Alaska to Catalina Island, Calif.
" " aspera (Baird), 1863 Sitka, Alaska to San Pedro, Calif.
" " munda Carpenter, 1864 Middleton Island, Alaska to San Diego
" painea (Dall), 1903 Dundas Bay, Alaska to San Diego.
" parva (Smith), 1877 Gulf of Calif. to Galapagos.
" peasei (Tryon) 1880, Bulf of Calif.
" perita (Hinds), 1843 West Mexico
" poulsoni Carpenter, 1864 Santa Barbara, Calif. to Magdalena Bay, Lower, Calif.
" pumila (Broderip), 1832 Galapagos.
" sclera (Dall), 1919 Coast of Washington.
" subangulata (Stearns), 1873 Orcas Island, Wash. to Gulf of Calif.
" tracheia (Dall), 1919 Sitka, Alaska in 15 fathoms.
" turrita (Dall), 1919 San Quentin Bay, Lower Calif.

Genus Aspella Morch, 1877 Type (by monotypy), Ranella anceps Lamarck.
Shell with two strongly developed lateral varices, intermediate varices absent.
Aspella bakeri Hertlein and Strong, 1951 Gulf of Calif. to Panama.
" erosa (Broderip), 1832 Nicaragua, Galapagos.
" pyramidalis (Broderip), 1832 Acapulco to Panama, Galapagos.

Genus Eupleura H. and A. Adams, 1853 Type (by subsequent designation, Cossmann, 1903), Eupleura caudata (Say).
Shell with two opposite and continuous varices, apertureoval, anterior canal open, moderate length.
Eupleura muriciformis (Broderip), 1832 Gulf of Calif. to Panama.
" nitida (Broderip), 1832 Mazatlan to Ecuador.
" triquetra (Broderip), 1832 Gulf of Calif.
" pectinata (Hinds), 1843.

Genus Favartia Jousseaume, 1880 Type (by original designation), Murex breviculus Sowerby = Murex tetragonus Broderip, 1833.
Shell with numerous rounded varices, crossed by raised spiral lines; sperture rounded, outer lip slightly plicate within.
Favartia humilis (Broderip), 1832 Panama to Guayaquil and Galapagos.

Genus Urosalpinx Stimpson, 1865 Type (by original designation), Fusus cinereus Say.
Shell with numerous longitudinal ribs, crossed by raised spiral lines; canal short, open, curved; outer lip dentate or lirate within.
Urosalpinx cinereus (Say), 1822 San Francisco Bay and Elkhorn Slough (introduced).

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Genus Vitularia Swainson, 1840. Type (by monotypy), Murex vitulinus Auct. = M. milaris Gmelin.

Shell with numerous, nearly obsolete, varices; no distinct spiral sculpture; spire elevated; canal short, straight, open; aperture long oval; outer lip strongly dentate within.

Vitularia salebrosa (King), 1831 Cerros Island to Panama
" " extensa Maxwell Smith, 1947. Panama.

Family Thaisidae

Purpura Bruguiere, 1789 Type (by subsequent designation, Montfort, 1810) Buccinum persicum Linne.

Purpura patula pansa (Gould) 1853 Gulf of Calif. to Peru.
" columellaris Lamarck, 1822 Gulf of Calif. to Chile.

Thais Roding, 1798 Type (by subsequent designation, Iredale, 1915) Thais lens Roding = Murex fucus Gmelin = Nerita nodosa Linne.

Thais (Thais) callaoensis Gray, 1828 Galapagos, Peru.
" " centiquadrata (Duclos) Gulf of Calif. (= triserialis 1832 (Blainville), 1832.)
" planospira Lamarck 1822 Galapagos Islands.

Subgenus Thaisella Clench, 1947 Type (by original designation), Purpura trinitatensis Guppy)

Thais (Thaisella) kioquiformis Duclos, 1832 Gulf of Calif. to Ecuador.

Subgenus Stramonita Schumacher, 1817 Type (by subsequent designation, Gray, 1847) Buccinum haemostoma Linne

Thais (Stramonita) biserialis (Blainville), 1832 Lower Calif. to Peru.
" " chocolata (Duclos), 1832 Perus, Ecuador.
" " delessertiana (d'Orbigny), 1841 Peru
" " peruensis Dall, 1909 Peru.

Subgenus Mancinella Link, 1807 Type (by subsequent designation, Iredale, 1915), Murex gemmulata Lamarck.

Thais (Mancinella) crassa (Blainville), 1832 Ecuador, Peru
" " triangularis (Blainville), 1832 Gulf of Calif. to Ecuador.

Subgenus Polytropa Swainson, 1840 Type (by subsequent designation, Hermannsen, March, 1847) Buccimum lapillus Linne.

Thais (Polytropa) emarginata (Deshayes), 1839 Bering Sea south to Topolobampo, Mexico.
" " lamellosa (Gmelin), 1792 Aleutian Islands to Santa Barbara, Calif.
" " lima (Gmelin), 1792 Kotzebue Sound, Arctic Ocean south on the west to Bering Island, the Kuril Islands and northern Japan on the east to the Aleutians and south to Cerros Island, Lower Calif.

Genus Cymia Morch, 1860 Type (by subsequent designation, Cossmann, 1903), Buccinum tectum Wood

Shell strongly angulated in the middle; spire elevated; aperture ovate; canal short, open; columella with a large plait running clear to the apex; inner lip reflected; umbilicus open, corrugated; outer lip lirate within.

Cymia tectem (Wood), 1828 Gulf of Nicoya to Ecuador.

Genus Concholepas Lamarck, 1801 Type (by monotypy), Concholepas peruvianus Lamarck = Buccinum concholepas Brug., 1789

Shell with last whorl very large, expanded; spire very short, obliquely inclined toward the left side; aperture very wide, slightly channeled anteriorly; inner lip flattened; outer lip with two small teeth in front.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Concholepas concholepas (Bruguiere), 1789 Peru to Straits of Magellan.

Genus Acanthina Fishcer de Waldheim, 1807 Type (by subsequent designation, Gray, 1847, *Buccinum monoceros* Chemnitz= *Buccinum calcar* Martyn.

Shell with a thornlike tooth on the lower edge of the outer lip.

Acanthina (Acanthina) angelica Oldroyd, Gulf of Calif.
" " brevidentata "Mawe" (Wood), 1828 Panama to Peru.
" " grandis "Gray," Sowerby Galapagos.
" " lugubris Sowerby, 1822 San Diego to Galapagos.
" " muricata (Gray)Broderip, 1832 Gulf of Calif. to Ecuador.
" " tuberculata Gray, 1835 Gulf of Calif. to Peru.
" " unicornis (Bruguierre), 1789 Peru to Chile. (= A. calcar Martyn-non-binomial?)

Subgenus Acanthinucella Cooke, 1918 Type (by original designation), *Acanthina punctulata* Sowerby.

Acanthina (Acanthinucella) spirata (Blainville), 1832 Puget Sound south to Socorro Island.
" " " punctulata (Sowerby), 1835 Monterey to San Tomas, Lower Calif.
" " " paucilirata (Stearns), 1871 San Pedro, Calif. to Cerros Island, Lower Calif.

Genus *Drupa* Roding, 1798 Type (by subsequent designation, Hedley, 1913): *Drupa morum* Roding

Shell very solid; varices nodulous or scaly; spire very short; inner lip tubercularly wrinkled; outer lip with plait-like teeth, within digitate; canal short.

Drupa albolabris (Blainville, 1832 Clipperton Island(D. *ricinus* Lam. of authors)

Genus *Morula* Schumacher, 1817 Type (by original designation): M. *papillosa* Schumacher = *Drupa uva* Roding.

Shell with a longer spire, smaller size and more fusiform than in *Drupa*. The teeth within the outer lip single, not grouped.

Morula aspera (Lamarck), 1816 Clipperton Island.
" ferruginea (Reeve), 1846 Cape San Lucas to La Paz.
" lugubris (C.B. Adams), 1852 Redondo Beach, Calif. to Panama.
" uva (Roding), 1798 Clipperton Island, Guadalupe Id., Mexico.

Family *Coralliophilidae*

Genus Coralliophila H. and A. Adams, 1853 Type (by subsequent designation, Cossmann, 1903), *Purpura neritoidea* (Lamarck) = *Pyrula neritoidea* Lamarck = *Murex neritoideus* Gmelin (preoccupied by *M. neritoideus* Linne) = Purpura violacea Kiener, 1836.

The following species are tentatively placed in this genus, but it is certain that they are not *Coralliophila* s.s. and after further study must be assigned to other genera.

Coralliophila costata (Blainville), 1832 Mazatlan to Peru.
" hindsii Carpenter, 1856 Panama.
" nux (Reeve), 1846 Guaymas to Galapagos.
(*Pseudomurex*)
" oldroydi Oldroyd, 1929 Pt. Conception to Tosos Santos Bay, Lower Calif.
" orcuttiana Dall, 1919 Magdalena Bay,
" scalariformis (Lamarck), 1822 Ecuador.
" squamosus (Broderip), 1832 Panama to Peru.

A SYSTEMATIC OUTLINE OF THE MURICACEA IN THE EASTERN PACIFIC (cont.)

Coralliophila	stearnsiana Dall, 1919.	Lower California.
"	carduus (Broderip), 1832	Peru

The following comments are not a part of the foregoing paper, and were not read at the meeting. They will pertain to certain species and genera and the reasons for not listing or using them.

Genus Hexaplex Perry, 1811 Conchology or the Natural History of Shells.

"Character. Shell univalve, spiral, divided longitudinally by six folds, from whence the name is dericed; these folds are membranaceous and tuberculous, and sometimes spreading out into branched horns; the mouth round; the beak long, and armed with several calcaria or spurs, in a similar manner to the genus Triplex."

The first three species of the six the author places in this genus are tenuis, anatomica, and fusca, being obviously of the genus Homalocantha. Of the other three species foliacea, punctata, and ovata, judging from the rather clear colored drawings, there could be but one remote possibility of an assignment of any of our species above placed in Muricanthus, and that might be Perry's figure of foliacea. However, of all of the closely related species of our Muricanthus we have but one possible species and that is M. princeps, all other species having far too many varices. It would seem to me to be illogical to assign one species to Hexaplex and all the others to another genus.

Jousseaume in 1879 in the Revue et Magazin de Zoologie, page 329 listed Hexaplex Perry and named as type Murex cichoreus Gmelin (= Murex s.s. (L.) (Lamarck). However, inasmuch as the species designated as type is not mentioned by Perry, this type designation is obviously void.

Therefore, it is difficult for me to understand why the use of this generic name should be suggested. I know of but one important collection using it, a paleontological collection, and they use it in a broad sense placing the Pacific coast species, interestingly enough in the subgenus Muricanthus.

It is also obvious that before an intelligent use of Hexaplex can be made, one of Perry's species must be designated as type. Inasmuch as the first three species mentioned and figured by Perry are obviously those now assigned to the genus Homalocantha, it would seem logical to designate Perry's Murex anatomica as type in which case Hexaplex should certainly replace Homalocantha. This designation of type is clearly valid and should at least take the name Hexaplex out of consideration in connection with the species listed under Muricanthus from this coast.

The question might well be asked of this curator: "If it is considered necessary to employ the name Muricanthus or another to distinguish the group involved, why complicate the matter by using as a genus the little understood name Hexaplex?"

Chicoreus colpos (Dall) - (= Murex palmarosa mexicana (Stearns), 1893) Preoccupied by M. mexicana Petit.

The following report on this species by Dr. Harald A. Rehder (personal communication, June 3, 1955) is self explanatory, and confirms the opinion of others.

Dear Mr. Burch:

I have looked up the holotype of Murex mexicana Stearns 1893 and find that it actually is not very closely related to the species palmarosae but seems to be very close to, if not identical with, Chocoreus torrefacta Sowerby, the only difference being that mexicana has a slight pinkish tinge around part of the aperture and anterior canal, while the apertural region in torrefacta is usually white or yellowish, although I have seen a few specimens of this species with traces of pink. I am inclined to believe that the Gulf specimen named by Stearns is actually a specimen from the Indo Pacific region as no further similar specimens seem to have turned up. I might mention that in our collection Dall gave this species the specific name

(Rehder letter, cont.)

colpos as the name *mexicana* is preoccupied by *mexicana* Petit.

Genus *Homalocantha* Morch, 1852 Type (by monotypy), *Murex scorpio* Linnaeus. Shell *ovate-pyriform*, with from five to eight varices; varices foliated and produced into expanded digitations; whorls rounded, sutures very deep; spire but little elevated; canal rather long, nearly straight and almost closed; aperture ovate, outer lip crenulated.

?Homalocantha varicosa (Sowerby), 1841 Acapulco to Peru. Homonym: Murex varicosus Sowerby, 1841, non Brocchi, 1814 G.B. Sowerby, 1879 and later Tryon cited *M. varicosus* from the Red Sea. Dall cited west American occurrences.

The species *M. norrisii* (Reeve), 1845 from Panama Bay has been placed in this genus by authors, but the reason for such an assignment is very obscure. Neither specimens examined nor the original figure in Reeve show any apparent resemblance to the type *Murex scorpio*. In the above paper it was merely placed in *Murex* s.l.

Jaton Pusch, 1837- It was my privilege to examine specimens of the type species *Murex decussatus* Linnaeus from West Africa, and I am well satisfied with the assignment of our species *festivus* to this genus.

Genus *Maxwellia* Baily, 1950 The disposition of the following species may be of interest to some.

Murex fimbriatus Adams, 1853 Dr. Myra Keen advises that this is a primary homonym and hence unavailable as a name. The original figure shows a shell close to *Murex gemma*. The type locality is the Gulf of California. No further records have come to light and Dr. Keen suggests that possibly Adams had a specimen of *Murex santarosana*, and this species need not be renamed.
There is also a *Typhis fimbriatus* Adams. (*M. fimbriatus* Brocchi,1814)

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

August 2, 1955

Mr. John Fitch called the group to order at 7:45 PM and welcomed about thirty persons including guests to our August meeting.

Mrs. Brooks, Treasurer, reported that our membership for the current year has exceeded fifty; fifty-two to be exact.

Mr. Fitch as Field Trip Chairman, gave a report on the planned trip to Cholla Bay scheduled for the 25th through the 27th of November. These three days will find the majority of the group in attendance that are planning to go; but, there is a possibility that some will arrive sooner or delay their departure beyond the 27th. The Turvers' will be on hand as expert guides and advisors as to the best collecting spots. They may be contacted through the Camp Office at Cholla Bay.

Mr. Crawford N. Cate reminded the group of the pot-luck to be held at their home Sunday afternoon, August 21st. Their address is 12719 San Vicente, Los Angeles 49. Please call EXbrook 4-3843 if you are planning to attend.

Mrs. Jean Wilkins, President of the Long Beach Shell Club, informed the group of the annual picnic of this organization. A meeting will be held at 2:30PM with the banquet to follow. Mrs. Wilkins will be hostess to the group at her home, 8140 Phlox Street, Downey. Please call TOpaz 2-8487 if you plan to attend. This banquet will be held on Sunday the 14th of August.

Mr. Fitch gave a short talk on up-welling in which he described the cause and effect of this phenomena. Localities where this might be found close to home, such as Point Fermin, and those a little more distant, namely, Punta Bunda at Ensenada, were discussed and illustrated on the blackboard,

Upwelling on this coast is caused by winds that in the summer, early fall and spring are with us constantly and prevailing from the West and North-west and blow the surface water away, allowing colder water to rise from a depth of up to 600 feet.

This is responsible for Monterrey flora and fauna being found on the Lower Coast of California and confined to the sheltered Southern side of mountainous promontories. Punta Bunda is one of the better examples of this, with a variation of twenty degrees F. from one side to the other of this rugged point.

Also of interest to the group were the permanent records that were displayed and explained, of the recording fathometer and the recording thermometer. These records,when properly used, go far in explaining why the scientific fisherman will catch fish while those without such aids are handicapped.

With the limited time left, several of the members that had attended the recent AMUPD meeting, reviewed in part, some of the papers of this, one of the more interesting and the best attended meetings. These reviews will be continued and concluded at our October session.

The meeting was adjourned at 10:00PM by Mr. Fitch.

D. L. Burford, Secretary

MINUTES 150
SEPT. 1955
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordually invited.

Please mail all news to your editor,- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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Over the past fifteen years we have published at odd times a great many papers on the fauna of West Mexico or the Panamic Province. Among these were the keys from the notebooks of the late A.M. Strong. These have been in great demand and our Distributional List has been long out of print. We now propose to reprint a large part of this material.

There will certainly be corrections and additions to be made, and all members and correspondents are urged to send their notes pertaining to the taxonomy, collecting data, and other pertinent information to the editor. This addenda will be mimeographed insofar as possible on separate sheets enabling those interested to assemble all matter on each family or genus.

No attempt will be made to cover the fauna in systematic order but rather to cover the more important and puzzling groups first.

The first lists will be considered preliminary outlines hoping by the cooperation of all to produce something worth while.

Family Terebridae
Genus Terebra Bruguiere,1789 Type (by monotypy, Lamarck,1799), Buccinum subulatum Linnaeus.

Subgenus Terebra s.s.
" Shell of moderate or large size, heavy; sculpture generally rather low or absent; columella twisted, often with one or two folds" (Grant and Gale,1931, p.464)

Subgenus Strioterebrum Sacco,1891 Type (by original designation) Terebra basteroti Nyst
" Shell small or medium sized, slender; whorls sculptured with axial ribs and spiral threads or grooves,sutural band generally well defined; aperture rather narrow, anterior canal short, notched, columella generally with a broad basal fold." (Grant and Gale)

Genus Terebra Bruguiere,1789 Key to Species

Whorls with a sutural band set off by a groove..
Subgenus Strioterebrum
Lower whorls smooth except for lines of growth
. Band wide, groove a little above the middle of the whorl
.. Yellowish white, with irregular vertical axial chestnut stripes
136 x 32 mm. Panama and Galapagos .... strigata
Reeve fig.5 Sowerby pl.61, fig.10. Tryon pl.2, f.29

. Band narrow
.. Last whorl globose or bulbous
... Whitish with retractive axial chestnut flames forming two obscure spiral bands
138 x 30 mm San Blas- Panama .... robusta
Reeve fig. 10 & 49. Sowerby pl.62, fig. 35. Tryon pl.8, f.16,17

.... Sutural band doubly crenated ..... variety lingualis
Reeve fig. 15 Sowerby pl.63, fig. 50

.. Last whorl short, base contracted
... Yellowish white, three spiral rows of chestnut spots
88 x 24 mm Galapagos........ ornata
Reeve fig. 14 Sowerby pl. 62, fig. 34 Tryon pl.2

Lower whorls with a spiral groove or cords
. Sutural band raised, more or less nodulose
.. Body whorl with a light peripheral band showing as a white line inside the aperture
... Adult shell stout and over 2 inches in length
.... Sculptured with spiral grooves and lines of growth only or faint axial ribs
..... White to bluish gray, with reddish or brownish interrupted spots
72 x 16 mm Gulf of California .... variegata
Reeve fig. 12 Sowerby pl.63, fig. 52 Tryon pl.2, fig. 15

.... Sculptured with spiral grooves and strong axial tibs
..... Brownish, obscurely banded and spotted
54 x 14 mm Panama to Galapagos .... armillata
Reeve fig. 12 Sowerby pl.61, fig. 49 Tryon pl.2, figs.21,23

.... Sculpture nodulous, with spiral cords and axial ribs
..... Three spiral rows of tubercles
...... Pale orange to dark brown, variously maculated
54 x 15 mm Panama to W. Colombia.... aspera
Reeve fig. 40 Sowerby pl.63, fig.44 Tryon pl.1, fig.7

..... Four spiral rows of tubercles
...... Reddish brown, faintly banded
40 x 11 mm Central America (loc. doubtful).... radula
Reeve fig. 68 Sowerby pl.64, fig. 95 Tryon pl.7, fig. 17

..... 3 to 5 spiral rows of tubercles
...... Of a general brownish tint
22 x 6 mm Panama (Probably young)... panamensis
Bull. Mus. Comp. Zool. vol. 43, p. 250

... Adult shell slender, less than 2 inches in length
.... Spiral sculpture of incised grooves
..... Sutural band hodulous on early whorls only
...... Axial ribs low but distinct
.... Bluish white to yellowish brown,irregularly blotched
32 x 6.5 mm So. Calif. to Scammons Lagoon pedroana
Bull. Mus. Comp. Zool. vol. 43, p. 251

...... Axial ribs reduced to mere lines of growth Var. philippinarum
Ann. Mag. Nat. Hist. v. 15, p.394 as M. simplex Carp.

..... Sutural band nodulous on all whorls
...... Spiral sculpture of 4-5 spiral grooves
.... Axial ribs distinct on early whorls only
.... Purplish brown to olivaceous,sutural bands whitish
40 x 8.5 mm Gulf of California.... albocincta
Mazatlan Catalogue #450

.... Axial ribs obsolete, spiral grooves strong
.... Whitish, faintly spotted with reddish brown
31 x 7 mm Gulf of California.... hindsii (var.)
Mazatlan Catalogue #451

.... Axial ribs strong, spiral grooves faint
.... Uniform reddish brown, sutural bands pale
30 x 6 mm Gulf of California .... rufocinerea (var.)
Mazatlan Catalogue #453

.... Surface faintly beaded
.... Whitish, tinted with red brown
30 x 9 mm Gulf of California ..... subnodosa (var.)
Mazatlan Catalogue # 452

.... Axial ribs and spiral grooves distinct on all whorls
.... Reddish white, red banded at base
25 x 5 mm Central America .... elata
Reeve fig. 128

.... Shining white (a doubtful species)
23 x 6 mm Galapagos.... frigata
Reeve fig. 132 Sowerby pl. 64, fig. 71, Tryon pl.7, f.26

...... Spiral sculpture of about 6 grooves
.... Axial ribs distant (about 12 on body whorl)
.... Livid purple, whitish on ribs
10.5 x 2.5 mm Panama.... bridgesi
Bull. Mus. Comp. Zool. v. 43, p. 253

.. Periphery and inside of aperture without color band
... Axial ribs strong on all whorls
.... Spiral sculpture of incised grooves
..... Axial ribs only slightly waved
...... Whitish, blotches of flesh color
44 x 9 mm San Blas.... specillata
Reeve f. 75 Sowerby pl.65, fig. 116 Tryon pl.7, f.18

..... Axial ribs strongly curved
...... Pinkish white to rich brown, unicolor
58 x 12 mm Santa Elena, Ecuador.... larvaeformis
Reeve. f. 41 Sowerby pl. 63, figs 45,46 Tryon pl. 45,66

.... Spiral sculpture of raised cords
..... Spiral cords about 4
...... Yellowish white, faintly banded with transparent flesh color
52 x 13 mm Ecuador ..... plicata
Reeve f. 76 Sowerby pl. 63, f. 61 Tryon pl.7, f. 20

..... Spiral cords about 7
...... Flesh colored, with occasional brown flecks
27 x 6 mm Lower California.... balaeonora
Bull. Mus. Comp. Zool. v 43, p.252

..... Spiral cords about 12
...... Straw colored
36 x 7 mm Cape San Lucas ..... lucana
Bull. Mus. Comp. Zool. v. 43, p. 252

. Sutural band nodulous, followed by a smooth band, then 3 spiral rows of nodes
.. Transparent ash, obscurely red spotted, purplish towards apex
55 x 14 mm San Blas to Panama ..... tuberculosa
Reeve f. 61 Sowerby Pl. 63, fig. 48 Tryon pl.7, f.31

. Sutural band with a double row of nodes,separated by a groove
.. White, more or less banded with reddish brown
45 x 12 mm Chile.... gemmulata
Reeve fig. 33

. Sutural band excavated
.. Axial ribs strong, whorls strongly rounded
... Variously purple banded
23 x 8 mm Central America .... varicosa
Reeve fig. 120 Sowerby text pl. 163 Tryon pl.7, f. 12

Genus Terebra Bruguiere,1789 List of species.
Terebra alata Hinds,1844 Central America
" albocincta Carpenter,1857 Gulf of California
" " hindsii Carpenter,1857
" " rufocinerea Carpenter,1857
" " subnodosa Carpenter,1857
" armillata Hinds,1844 Acapulco,Nicaragua to Panama,Gulf Calif.
" aspera Hinds, 1843 Acapulco, Panama to W. Colombia
" balaeonora Dall,1908 Lower California
" bridgesi Dall,1908 Panama
" brunneocincta Pilsbry & Lowe,1932 Nicaragua, near Mazatlan
" corintoensis Pilsbry & Lowe, 1932 Nicaragua,Gulf Calif.,
" cracilenta Li,1930 Panana
" frigata Hinds,1844 Galapagos
" galapagensis Dall Albemarle Island
" gemmulata Kiener,1839 Chile
" glauca Hinds, 1844 Panama
" (?) guayaquilensis E.A. Smith,1880 Ecuador
" incomparabilis Desh.,1859 Panama
" (Microtrypetes) iola Pils. & Lowe,1932 Mazatlan
" ira Pils. & Lowe,1932 Mazatlan, Gulf of Calif.
" isopleura Pils. & Lowe,1932 Mazatlan
" larvaeformis Hinds,1843 Ecuador
" ligyrus Pils. & Lowe,1932 Guaymas to Acapulco
" lucana Dall,1908 Cape San Lucas
" luctuosa Hinds,1844 Gulf of Calif.
" malonei Vanatta Santa Rosalia
" (Microtrypetes) mariato Pils. & Lowe,1932 Panama
" melia Pilsbry,1931 Panama
" montijoensis Pils. & Lowe,1932 Panama
" ornata Gray,1834 Cape San Lucas, Galapagos, Panama
" panamensis Dall,1908 Acapulco, Panama
" paphia Bartsch Acapulco
" pedroana Dall,1908 Santa Monica to Gulf of Calif.
" " philippiana Dall,1920
" (Microtrypetes) polypenus Pils. & Lowe,1932 Mazatlan
" radula Hinds,1844 Central America
" robusta Hinds,1844 San Blas to Panama
" " lingualis Hinds,1844 Panama- Near Mazatlan
" (Subula) rooseveltii Bartsch,1939 Socorro Island
" roperi Pils. & Lowe,1932 Mazatlan
" sanjuanensis Pils. & Lowe,1932 Costa Rica
" specillata Hinds, 1844 San Blas, Panama (near Mazatlan)
" strigata Sowerby,1825 Panama, Galapagos, Gulf Calif.
" (? Perirhoe) stylus Dall,1908 Panama
" tuberculosa Hinds, 1844 San Blas to Panama
" varicosa Hinds,1844 Central America
" variegata Gray,1834 Gulf of Calif. to Panama

NEW PUBLICATIONS

The Pyramidellid Mollusks of the Pliocene Deposits of North St. Petersburg, Florida by Paul Bartsch Smithsonian Miscellaneous Collections, vol.125, No.2, May 5,1955.

In this large paper of 102 pages and 18 plates a great number of new species are described. These are of comparatively little interest to the West Coast collector other than the combination of very clear photographic figures and some interesting generic assignments,

One of the most arresting chapters is the discussion of hybrids, and the description of *Striopyrgus*,"new pseudogenus". This is the first time I have ever seen this term used in zoological nomenclature, although not uncommon with botanists working with hybrids. It will be catalogued as a new genus. The author gives a very clear account of hybridization among mollusks pp 53-57. In this discussion mention is made of some of our species from this coast i.e. *Turbonilla* (*Pyrgiscus*) *tenuicula* Gould. As we all know there are countless forms of this small species. The description of *Striopyrgus* is " Shell of typical *Turbonilla* shape. The sculpture consists of axial ribs and a mixture of strong incised spiral grooves and fine spiral lines in the intercostal spaces" Type: *Striopyrgus hybridus*, new species. It is interesting to consider the probability that this genus both from the description and comparison with the type might well contain a vast number of specimens from this coast.

The probability of having too many generic divisions in this family has been a matter of open discussion among all who have worked with them to any extent. The late George Willett made a very good case in Trans. San Diego Soc. v 8, No.30, pp 379-406, pls. 25,36 for lumping the Pyramidellis genera *Chemnitzia* and *Strioturbonilla* with *Turbonilla* s.s.

The existence of intergrades or hybridization between subspecies or forms of one species is accepted by most as something to reasonably expect, but extensive crossing between generic groups may leave some of us a bit incredulous.

Dr. Bartsch mentions in his discussion a *Goniobasis*. I recall an occasion many years ago when I started out to make an enthuisiastic job with this group. From the top of one small stone in a stream north of Crescent City, Calif. I collected a small handfull of specimens from which we could identify at least five of Junius Henderson's species along with ample intergrades. My personal interest in freshwater mollusks suffered an abrupt decline.

The Nautilus, Vol. 69, No. 1, July,1955.
Some Notes on Pseudochama by N.H. Odhner. This is an interesting and well illustrated paper.
The identity and Validity of Hydriella australia (Lamarck),1819 by Donald F. McMichael.
New Conus from Costa Rica by Jeanne S. Schwengel. This paper is well written, the new species and subspecies are well described and figured. This is said because even so it is a matter of some question to classify a shell in one of these new species without having seen a specimen compared with a type. These are shells collected by Ted Dranga in Costa Rica and many of us will have large sets that we think might or should contain these species. If there are any paratypes or compared topotypes in any of the collections on this coast it would be a matter of great interest to us. The species are *C. drangai*,*C. andrangae*,*C. gradatus thaanumi*,*C. recurvus henelae*.

The Sublittoral Fauna of Two Sandy Bays of the Isle of Cumbrae, Firth of Clyde by R.B. Clark J. Mar. Biol. Ass. U.K. ,1955.
We have a vast literature on the intertidal animals of this coast, but very little indeed on the sublittoral. It is hoped that our growing number of aqualung divers will start contribution to our knowledge of this fauna. The above paper published in Great Britain is a sample of work that should be done here.

Basteria Vol. 19, No. 1, 23-v-1955
Vondsten van tropische kauri's in Nederland door W.S.S. Van Benthem Jutting. This is an account of ancient wrecks that contained large numbers of cowry shells. In the 16th to 19th centuries goods and slaves were purchased with oriental cowries.
Notes on Streptostele (Raffraya) horei E.A. Smith by L.A.W.C. Venmans.
Notes on the Anatomy of Streptostele by Hugh Watson.
(The last two papers on a land species of the continent of Africa).

Aquatic snails found attached to feathers of White-faced Glossy Ibis by Ernest J. Roscoe. Species of Physa,Lymnaea and Helicoma were found. This is another contribution to the study of the dispersal of shells. From the Wilson Bulletin,1955.

The Type Locality of Triodopsis cragini Call (Pulmonata:Polygyridae) by Ernest J. Roscoe and Lottie O. Roscoe. The Great Basin Naturalist , Dec. 30,1954.

The North American Genus Lioplax in the Family Viviparidae by William J. Clench and Ruth D. Turner. Occasional Papers on Mollusks Museum of Comparative Zoology, Harvard University. 20 pp 4 pls.

Results of the 1954 Pismo Clam Census by John E. Fitch Calif. Fish and Game, Huly,1955 Briefly the returns were good in the sanctuaries and very poor outside of the closed areas.

Province of British Columbia-Provincial Museum of Natural History and Anthropology- Report for the year 1954.
One large paper in this report is of some interest in our field " The Natural History of the Forbidden Plateau Area Vancouver Island, British Columbia by G.A. Hardy. The mollusks found are described and the habitats given in detail.

Adenda e Corrigenda Ao Ensaio De Catalogo Dos Molusculos Do Brasil por Frederico Lange De Morretes Arq. Do. Museu Paranaense Dec. 1953 Rather an extensive adenda to the excellent catalogue.
The following three papers by the same author- all well written and well illustrated- Nova Thais Do Brasil; Dois Novos Moluscos Do Brasil(Adelopoma and a Caecum); Sobre Megalobulimus Paranaguensis Pilsbry & Ihering. The last three papers from Arq. Museu. Paranense Dec. 1954.

The Collector- A Publication of the Sacramento Valley Conchological Society Vol. 1, No.1. No.3 . These are well prepared bulletins and are a credit to the very active group in Sacramento. The society was organized in the fall of 1952 by Paul Steele and Dalton Merkel.

New York Shell Club Notes- August,1955 . It is a pleasure to note the continued enthusiasm and activity of the New York Club.

Hawaiian Shell News Nos. 7 and 8, May and June,1955
Among the multitudinous activities of our shell collecting cousins in Hawaii they have a department known as Research Department. Some of the things they are digging up are excellent and should be read by all interested in such matters particularly in recent issues on Conus. I note with a bit of a grin that they have tackleda few that caused us to scratch our heads. I believe that the tern " nice question" is used rather more by the legal profession than others when they mean a matter very close or difficult. The term might well be used to state that any student of the genus Conus will not work long until he has his desk well covered with these " nice" questions.

Circulares Del Museo y Biblioteca De Zoologia De La Habana
Editor: M.L. Jaume- 13 No. 351, Vedado, Habana,Cuba-$1.50 100 pages.
The final index of the Catalogo de los Moluscos de Cuba was published,
Numbers of new subspecies of Liguus have been described as well as a wealth of other valuable information. It is essential to have this publication if one wishes to keep up with the new species of the West Indies.

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I have the annual report of the Canal Zone Biological Area before me. Dr. James Zetek has done a wonderful work down there.
If you happened to overlook an extremely interesting work " Barro Colorado, Tropical Noah's Ark" by J.P. McEvoy, look it up in The Readers Digest for May,1955.

Roy L. Morrison of San Diego is back from his big hunt in Europe. He writes that while he did get some shells from the Norwegian Fiords and some tree snails in Switzerland, he brought none back from the Mediterranean. O.K. as old as I am maybe I wouldn't be looking for sea shells on the French Riviera either.

Ernest J. Roscoe formerly of the University of Utah will be at the Museum of Zoology, University of Michigah, Ann Arbor from now until advised. He takes his new location this month.

Conservation

It is interesting to note the immediate effect of extensive commercial collecting of shells. Many localities that were rich collecting localities in my memory are virtually dead today. The shell collector who collects shells for study or personal cabinet has little to do with this. As a dealer in scientific specimen shells only I am often amazed when as recently I am offered 5000 large " Pink Murex". Such vast collections are made for the curio trade to manufacture gadjets with. All of the shell collectors on the face of the earth would not need 5000 of those shells in that many years. Many fine localities in Mexico are now meeting the same fate the fine old California spots did. And it seems to be going around the earth. A quotation from a letter at hand from Zamboanga is but one of many " Not much hope of securing any more Tridacna gigas as these shells are now very scarce around here while a few years ago tons of these shells could be gathered , and in fact the last ones which you received did not come from the Philippines but from British North Borneo. Due to the expansion of the shell business here in Zamboanga shells which a few years ago could be gathered by sacks are now no longer available except in very small quantity and the best places for gathering are fetting further and further away.

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
September 6, 1955

Mr. John Fitch, president, called the meeting to order at 8:00 P.M. and welcomed an attendance of about forty persons including guests.

Mr. Conrad Limbaugh of Scripps Institute of Oceanography at La Jolla was introduced as the guest speaker of the evening. The speaker informed us that the film scheduled to be shown was unavailable but that it would be sent to us for showing in October. Before showing the film that was substituted in its place, Mr. Limbaugh gave a short talk on the squid using the blackboard illustrating the spots where these animals were observed breeding. He commented on the unusually large numbers of squid observed this year and went pn to illustrate their breeding methods and the type of environment sought by these creatures and the disposition and growth of their eggs.

Several reels of film were then shown by Mr. Limbaugh and these included underwater activities on this coast as well as Guaymas, Mexico. Numerous fish were identified by the speaker and comments as to their habits and habitats wre made.

Following the program Mr. Fitch announced that the October meet-°ingwould include the above mentioned film plus the discussion of the AMUPD papers that was started in August.

Mrs. Brooks, treasurer, gave a financial report and announced that four more persons have joined our organization, making a total of fifty six.
Mrs. Mary Turver informed us that she had been in contact with the camp at Cholla Bay and gave a report on the facilities to be had.
Mrs. Janas brought a selection of road maps and brochures for the members planning to attend the three day field trip to Mexico.
Mr. Fitch promised that a further discussion of this trip would be held in the neat future for all members that are planning to attend this field trip.

Mr. George Kanakoff gave a talk on the Muricidae commenting in particular on the paper Mr. John Burch gave at the AMUPD and pub-lished in a recent issue of the " Minutes". Generic terms were discussed as to their probable values and it was agreed that this family could stand some extensive revising.

Mr. Fitch adjourned the meeting at 10:00 P.M. and urged everyone that had not already done so to examine the imposing array of specimens from the Museum and the Burch collections that were displayed to illustrate the informative and interesting viewpoints of Mr. Kanakoff.

D.L. Burford- Secretary

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CONCHOLOGICAL
CLUB OF SOUTHERN
CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif.

All interested persons are cordially invited.

Please mail all news to your editor,- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

We expect to have an interesting program at our next meeting, and final plans will be made for our club excursion to Punta Penasco, Mexico.

Annual election of officers.

All members are urged to attend.

Family Mitridae

Genus Mitra Martyn,1784 Type (by subsequent designation, Dall,1905), Mitra tessellata Martyn.

The question of the use of Martyn or of Lamarck,1799 is again presented.

Dr. Dall placed most of our species under the genus Strigatella Swainson,1840 and subgenus Atrimitra Dall,1918. The type of Strigatella is Mitra zebra Lamarck, a smooth, rather short species much like a Pyrene fide Grant and Gale.

Genus Mitra Martyn,1784 Key to Species

Sculpture of fine incised lines or threads only
. Shell large, over 2 inches in length
.. Whorls somewhat shouldered
San Diego to West Mexico .... fultoni E.A. Smith

.. Whorls not shouldered
... Fine axial sculpture present
85 x 25 mm Central America .... swainsonii Broderip

... All axial sculpture absent
.... Spiral sculpture of fine threads
72 x 24 mm Gulf of California .... mexicana Dall

.... Spiral sculpture of incised lines
..... Incised lines distinct
...... Incised lines punctate
56 x 19 mm Farallones to Cortez Bank... idae Melville

...... Incised lines not punctate
56 x 22 mm Peru and Chile .... orientalis Gray

..... Incised lines indistinct
132 x 36 mm Gulf of Calif. .... zaca Strong,Hanna, Hertlein

. Shell smaller, about 1 inch or less in length
.. Spiral sculpture of fine incised lines only
... Incised lines over entire surface
5.5 x 2.5 mm Catalina Island.... loweana Pils.

... Incised lines not over entire surface
.... Incised lines confined to a subsututal band
19 x Gulf of Calif. .... dolorosa Dall

.... Incised lines becoming obsolete on last whorl
30 x 11 mm Crescent City to Todos Santos Bay .. Catalinae Dall

.. Spiral sculpture of incised lines and fine threads
... Base with increasingly strong threads
27.8 x 12.7 mm Ecuador.... salinasensis Bartsch

... Base smooth, spiral threads in a subsutural band
14 x mm Catalina to San Diego diegensis Dall
13 mm x 6.25 mm Los Coronados Islands.. coronadoensis Baker and Spicer

Sculpture of more than incised lines or fine threads
. Axial sculpture very fine or absent
.. Spiral sculpture of sharp cords or keels
... Keels alternating in strength
30 x 10 mm Gulf of Calif. to Central America .. effusa Swainson

... Keels of equal strength
.... Interspaces between keels smooth
60 x 20 mm Gulf of Calif. to Panama.. funiculata Reeve

Sculpture of more than incised lines or fine threads
. Axial sculpture very fine or absent
.. Spiral sculpture of sharp cords or keels
... Keels of equal strength
.... Interspaces between keels axially threaded
..... Shell slender, attenuated
36 x 9 mm Acapulco to Panama... attenuata Reeve

..... Shell stout,fusiform
25 x 9 mm Corinto to Panama... erythrogramma Tomlin

. Axial sculpture present
.. Spiral sculpture of incised lines
... Surface pitted at the middle of the whorls
65 x 25 mm Gulf of Calif. to Peru.... lens Wood
.... Axial ribs distinct,cut by the spiral lines
110 x 30 mm Magdalena Bay, La Paz to Central America ....
belcheri Hinds

.... Axial ribs and spiral lines indistinct
30 x 14 mm Gulf of Calif. to Peru ... tristis Broderip

.. Spiral sculpture of raised cords
... Shell elongate-ovate
.... Axial ribs extending to the canal
14.3 x 6 mm Panama Bay.... marshalli Bartsch

.... Axial ribs becoming obsolete anteriorly
..... Columellar plaits four
17.5 x 4.5 mm Point Loma to Panama.. solitaria C.B. Adams

..... Columellar plaits two
5.6 x 2.7 mm La Jolla orcutti Dall

... Shell subcylindrical, slender
15 x 5 mm Galapagos .... gratiosa Reeve

Genus *Mitra* Martyn,1794 List of species

Mitra	*attenuata* Reeve,1844	Acapulco to Panama
"	*belcheri* Hinds,1843	Magdalena Bay to Central America
"	*catalinae* Dall,1919	Crescent City to Todos Santos Bay
"	*coronadoensis* Baker & Spicer,1932	Coronado Island
"	*crenata* Swainson,1835	Cape San Lucas to West Colombia
"	*delorosa* Dall,1903	Gulf of California
"	*diegensis* Dall,1919	Catalina Island to San Diego
"	*effusa* Swainson,1835	Gulf of Calif. to Panama
"	*erythrogramma* Tomlin,1931	Gulf of Calif. to Panama
"	*fultoni* E.A. Smith,1892	San Diego to Ballenas Lagoon
"	*funiculata* Reeve,1844	Gulf of California to Central Am.
"	*gratiosa* Reeve,1845	Galapagos
"	*idae* Melville,1893	Farallones to Cortez Bank
"	*lens* Wood,1828	Gulf of Calif. to Peru
"	*loweana* Pilsbry,1931	San Pedro to San Geronimo Id.,L.C.
"	*marshalli* Bartsch,1931	Panama
"	*mexicana* Dall,1919	Guaymas
"	*orcutti* Dall,1920	San Diego
"	*orientalis* Martens,1897	Ecuador to Chile
"	*salinasensis* Bartsch,1928	Ecuador
"	*solitaria* C.B. Adams,1852	San Diego to Panama
"	*swainsonii* Broderip	Central America
"	*tristis* Swainson,1835	Gulf of Calif. to Peru
"	*zaca* Strong and Hertlein	Santa Maria Bay, Lower Calif.

Family Volutidae

Genus Boreomelon Dall,1918 Type, Scaphella stearnsii Dall,1872
Proc. Biol. Soc. Wash. vol. 31, p. 137,1918

Dall described Boreomelon as a subgenus of Fulgoraria Schumacher, 1817. Maxwell Smith in " A Review of the Volutidae" gave Boreomelon generic standing. This seems logical.

Boreomelon stearnsii (Dall),1872. " Shumagin Islands, Alaska and westward to Captain's Bay, Unalaska in 40 to 100 fathoms rocky and muddy bottom; also in Bering Sea northward to the line of floating ice in winter. Type locality Pribilof Islands,Alaska

Boreomelon benthalis (Dall),1895 Gulf of Panama in 1672 fathoms. This species was described as Scaphella by Dall and later in his " A Review of the American Volutidae",1907 placed it in Adelomelon.

Genus Phenacoptygma Dall,1918 Type (by orig, desig.),Daphnella cortezi Dall,1908

Phenacoptygma cortezi (Dall),1908 Off Cortez Bank in 984 fms. and off San Diego in 639 fms. Type locality, off Cortez Bank.

Adelomelon ancilla (Solander),1786 (A. magellanica (Lamarck),1811)
Chile to Magellan Straits

Genus Miomelon Dall,1907

Miomelon philippiana (Dall),1889 Chile

Genus Enaeta H. and A. Adams,1853

Enaeta cumingii (Broderip),1842 Magdalena Bay to Peru,Gulf of Cal.
Enaeta barnesii (Gray),1825 Cape San Lucas to Peru, "
Enaeta pendersenii Verrill,1870 La Paz, Mexico

Genus Tractolira Dall,1895

Tractolira sparta Dall,1895 Gulf of Panama

Genus Calliotectum Dall,1889

Calliotectum vernicosum Dall,1889 Off Ecuador and the Galapagos

New Publications

On the Genus Camptoceras (Moll. Pulm.) by Bengt Hubendick
Arkiv For Zoologi 1955 Serie 2 Band 7 Nr.22
The paper is in English, well illustrated with 11 text figures. A very interesting discussion of the anatomy- placing it in the Planorbidae.

On a Small Material of Fresh Water Molluscs, collected by Prof. T. Gislen in Australia by Bengt Hubendick Lunds Univ. Arsskrift N.F. Avd.2, Bd 51, Nr.6 11 pages - well illustrated.

The Molluscan Land Operculate Genus Liarea by A.W.B. Powell
Records of the Auskland Institute and Museum Vol. 4, No.5
23 pp 4 pls. illustrating 40 figs. A thorough work including both systematic key and locality key.

Anatomy, Life History, and Evolution of the Mites Parasitizing Fresh-Water Mussels by Rodger D. Mitchell Misc. Pub. Museum of Zool., Univ. of Mich, No. 89 April 29,1955
28 pages and 6 figs.

Studies on Mesodon ferrissi (Gastropoda Pulmonata). 1 General ecology and biometric analysis - Ecology, vol.36, no.1, Jan.,1955. by Alah Solem

Living Species of the Pelecypod Family Trapeziidae by Alah Solem
Proc. Am. Mal. Soc. v. 31, pt.2, Dec. 1954
22 pp 3 pls. This should be a very valuable work revising a very confusing family.

Mexican Mollusks Collected For Dr. Bryant Walker in 1926 XI Drymaeus By Alan Solem Occ. Pap. Mus. Zool., Univ. of Mich. No. 566, May 13, 1955. 20 pp 5 plates

Nomenclatural Review of the Paleozoic Pelecypod Family Conocardiidae by David Nicol Journ. Paleontology, v.29, no.3, May,1955.

Morphology of Astartella, a Primitive Heterodont Pelecypod by David Nicol Journ. Paleo. v 29, no.1, Jan.,1955.

The Distribution,Ecology and Life History of Pomatiopsis cincinnatiensis (Lea), An Amphibious Operculate Snail by Henry Van Der Schalie and Dee Saunders Dundee- Trans. Am. Micro. Soc., v LXXIV no2, April,1955. This is well illustrated and a very interesting paper for all interested in possible intermediate hosts, and certainly to all of us who have collected and studied the Californian species.

Discussion of the Paper by L.J. Olivier by Henry Van Der Schalie
Am. Jr. Trop Med. & Hyg. v.4, no.3, May,1955.
It is rather alarming to read of the rapid spreading of the schistomiasis, and to learn that better than half of the entire 15 million population of Egypt are now infected to some extent.

Morphological Studies on the Family Planorbidae (Mollusca:Pulmonata)
I. Genital organs of *Helisoma trivolvis* (Say) (Subfamily Helisomatidae F.C. Baker,1945)
II. Genital organs of *Biomphalaria boissyi* (Subfamily Planorbinae H.A. Pilsbry,1934) by Emile T. Abdel-Malek
Trans. Am. Mic. Soc. April & July,1954.

Illustrated Catalogue of Japanese Shells Edited by Dr. Tokubei Kuroda
Vol. 2, No. 1, July 1,1955 Gastrochaenidae Vesicomyidae
Gastrochaenidae in Japan 2 plates, 18 figs.

The families are revised but no new species described.

A series of 12 papers titled- Illust. Cat. Jap. Shells Ser. B., No. 1,2,3,.. Each paper figures and describes a species-

1. Emarginula imaizumi Dall (Fissurellidae)
2. " ? imella Dall "
3. Emarginula choristes Dall "
4. Pectinodonta rhyssa (Dall) (Pectinodontidae)
5. Machaeroplax koreanica (Dall) (Trochidae)
6. " delicata (Dall) "
7. Liotina (Liotinaria n. subgen.) solidula (Gould) (Turbinidae)
8. Cocculina japonica Dall (Cocculinidae)
9. Dentalium (Graptacme) luchuanum Dall (Dentaliidae)
10. " (Laevidentalium) crocinum Dall "
11. " (Rhabdus) nagoense Dall "
12. Callotropis (Solaricida) hondoensis (Dall) (Trochidae)

Geology of Bikini and Nearby Atolls by Kenneth O. Emery, J.I. Tracey Jr., and H.S. Ladd. Geological Survey Professional Paper 260-A

This is a very large report, boxed, 265 pages, 64 plates and 16 large maps. This is an exceedingly interesting work in which mollusks are discussed and mentioned frequently, as well as being shown in the plates of the reefs. Of course, the work is as it states on the geology.

****

We have a letter from Walter Eyerdam in Seattle advising that he has returned from his summer in Alaska bringing his usual large catch of botanical specimens as well as shells. And during his absence he became a grandfather again.

The Burche's had the pleasure of having Mr. and Mrs. Herb Ward of Guam for house guests last week- saw their slides in color etc. and feel that we are now much better acquainted with the conditions around Guam.

Dr. T. Ino has returned to Japan. It was a pleasure to know him and his serious work.

H.W. Miller of Cuba paid a visit to this country recently but we feel greatly offended because he spent all of his time on the other coast.

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Mr. E.P. Chace gave a very brief summary of some of the papers given at the A.M.U.P.D. meeting at Stanford- Oct meeting of SCSC. Inasmuch as it is always difficult to make sufficient notes when hearing a paper, and another may jot down something of interest that we overlooked, I will give a few of Mr. Chace's notes.

Dr. Myra Keen " A Few Minor Groups Revised for the " Treatise of Invertebrate Paleontology".

The Nuculacea
Nuculidae & Nuculanidae

Genus Nucula	Nucula s.s.
	Leionucula smooth margins
	Acila divaricate sculpture

Nucinella is not a Nuculid It is not nacreous- has a Fossette i instead of a Chondrophore.

Philobrya- we have but one species- setosa

Corbicula was in this region in the Miocene but died out- is an Asiatic genus at present but one or more species have been introduced into this country in recent years.

Dr. Joshua Baily- about *Pecten gibbus* and gave us the correct naming of the valves- no right and left as in most bivalves but ventral and dorsal. He thinks that our *Pecten circularis* is more primitive than *P. gibbus*.

Dr. W.O. Gregg read a paper by Dr. J.P.E. Morrison U.S.N.M. " How many Syncera species are living in Death Valley?"-

There is a *Syncera* living at Saratoga Springs along with *Tryonia protea* and *T. longinqua*. A new species (as yet unnamed) is different from *Syncera infama* Berry. Dr. Gregg vommented that he uses *Assiminea* for this group, not *Syncera*. *Paludestrina* is not properly an *American* genus.

Dr. Hertlein- The types of the Verrill species described from the Gulf of Calif.

Tivela elegans is a synonym of *T. deleserti*
" *hindsi* " *T. bryonensis*
(hindsi is a variegated form)
Semele junonia V. is bright red- a good species
Semele rosea is peruvian and Ecuadorean
Lucina (or *Anadontia*) *chrysostoma* is an eastern species
Enaeta pendersoni V. is probably a good subspecies. It is neither E. cummingi nor E. barnesi/

Dr. Ino Diet and its effect on the coloration of shells. Showed pictures of a concrete holding tank in which specimens of *Turbo cornutus* were held, and feeding controlled. A change in the algae fed to the snails definitely effected the color of the shells.

Is this correct? [illegible]

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

October 4, 1955

Mr. John Fitch called the meeting to order at 7:45PM and welcomed about forty persons to our October meeting. After Mrs. Rose Burch introduced guests of the evening, Mr. Fitch commented that members seemed to be out-numbered.

Mrs. Brooks, Treasurer, reported on an increased membership that grows from month to month while attendance at our meetings remains more or less static. We now have a membership of fifty-nine, but usually fail to attract over forty persons, including guests, to our gatherings.

Mr. Fitch showed the film scheduled for last month's program and reviewed the facts brought out about the spawning habits of the squid as presented to us by Mr. Limbaugh at the previous meeting.

These films were taken in depths of water ranging from fifteen to ninety feet and were in color. Even though the red colors were filtered out by the depth of the water, this color appearing as black, was very evident in the male animal, as explained to us as a feature of the male, once attached to the female.

Both new and old masses of egg cases were pointed out and the method of clearing an area for the deposit of these egg cases was clearly shown. The blowing away of san by the jet-action of the squid for the attaching of the white egg cases quite often took place adjacent to previously used areas and these older deposited cases appeared very dark in contrast to the newer egg cases.

Mr. Fitch announced the appointments of Mrs. Rose Burch, Mrs. Mary Turver and Mr. George Kanakoff to the nominating committee for the officers for 1956.

A further discussion of the proposed field-trip to Cholla Bay was entered into with enthusiasm. All persons planning to attend this outing should definitely be present at the November meeting. Mr. Fitch explained that all details will be settled at this meeting and all questions will be answered.

Mr. Emory Chace reported on the balance of the papers presented at the AMUPD that were not brought to the attention of the group at our August meeting.

The meeting was adjourned by Mr. Fitch at 10:00PM.

D.L. Burford, Secretary

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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Conus ermineus Born vs. *Conus lithoglyphus* Reeve

I am well aware of the fact that the preponderance of opinion among current students of *Conus* seems disposed to place Reeve's name in the synonymy of Born's name. This among others was brought to my attention by the research of the careful workers in the Hawaiian Shell News. The following comments are not intended to start a controversy and I will be more than pleased to be corrected. However, this as well as others of a similar nature have come to my attention before.

Tomlin in his Catalogue of Recent and Fossil Cones, Proc. Mal. Soc. Pts. IV and V, p. 268, 1937 lists *Conus lithoglyphus* Reeve, 1843 and of Brug. 1792 as *6 ermineus* Born. Inasmuch as Tomlin's Catalogue is the first book to hand when a species of *Conus* is to be considered I saw fit to check the references, and my card index contains the following data:

Born (I. von) Baron Testacea Musei Caesarei... 1778 describes-

Conus ermineus- There is a brief and inadequate Latin description. Born did not figure the species in his work but referred to several pre-Linnean authors as follows:
Valentin-Abhand tab. 5, f.47
Gualtieri- Test. Tab. 20, f.Q
Seba- Thes. 3 tab. 42, f.31,34,35,40
Martini-Konch. Kab. II tab. 57, f. 630,631

Being fortunate in having all of those works in my personal library and readily available I studied the figures referred to.

Gualtieri (Nicolo) Index Testarum Conchyliorum.... 1742
Valentijn (F.)- F. Valentyn's ... Abhandlung von Schnecken...
Amboina... 1754 and 1773.
.....

Briefly, to my eyes the figures in these older works could not possibly be the species I have been labelling Conus lithoglyphus, but in form is very much more like Conus capitaneus. Conus lithoglyphus in my collection is much more elongate.

It may be of interest to note that one of the several copies of Gualtieri in my shop had been the property of some older conchologist who had written the modern name in pencil under each figure as he saw them AND under Tab. 20, f.Q he had written Conus capitaneus and with his assignment I agree until corrected. I might add that with few exceptions his pencilled names agree with my own views.

It is true that Linnaeus in Systema Naturae under Conus capitaneus gave thirteen older references, but not the particular figures cited by Born. This simply for the record.

In any event my personal inclination was to continue to use the name Conus lithoglyphus, and certainly until a more convincing earlier description is shown to me.

Born figured and described a number of species in his work, and his plates in color are good. No suggestion is made to discredit the Born species properly figured and described. The absence of a figure would indicate that perhaps Born did not possess a specimen of the shell he named Conus ermineus.

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Resurection of Ancient Names

There has been a tendency in the past few years to dig up obscure references and propose that names in common usage for a hundred years or more be discarded in favor of some little understood and vague description by one of the contemporaries of Linnaeus. It is my opinion that such things should be carefully weighed before acceptance.

One example of many is the matter of Perry's genera. Sowerby stated in the Zoological Journal as early as 1825 that in his opinion Perry's genera were too vaguely defined for serious consideration. The result of the work of the Sowerbys and others contemporary of Perry was to bury these generic puzzles with all proper ceremony. The Sowerbys and others of their time were very

thorough scholars, and it is questionable whether we should at this late date dig up such things as Hexaplex Perry 1811 etc. In my opinion they should, if indeed resurected now, be quickly returned to the grave in which the Sowerbys and others of their time placed them.

It is certain that the Sowerbys,Broderip and others since them have had access to the works of Born,Perry et al., and it seems a bit presumptuous to me for a student in 1955 to bring up names rejected by such scholars and propose to upset over a century of conchology. John Q. Burch

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Some Publications Received

Pelecypods From the Seychelles Islands Collected by Mr. W. v. Hasselberg by Helen Rost and Tron Soot-Ryen.- Acta Borealia A. Scientia No.8, 1955. 23 pp 3 illustrations.

This well written paper is of interest not only because the Pelecypod fauna of the Seychelles is very difficult to assign, but we recall with pleasure knowing Miss Rost while she was working here at the University of Southern California with Dr. Soor-Ryen.

Notes on a small collection of Pelecypods from Madagascar by Helen Rost and Tron Soot-Ryen Astarte Tromso Museum No.11,1955.

The Freshwater Pearl Mussel and Pearl Fishery on Luneburg Heath by Von Caesar R. Boettger. Abhandlungen der Braunschweigschen Wissenschaftlichen Gesellschaft Band VI,1954. 46 pages.

The paper is in German with an English summary. It contains a very through discussion of the species as well as historical references of interest re royal controls etc.

An Unofficial Interpretation of the International Rules of Zoological Nomenclature as amended by the XIII International Congress of Zoology, Paris,1948 and by the XIV International Congress of Zoology, Copenhagen,1953 by W.I. Follett, California Academy of Sciences, San Francisco. Distributed to members with the compliments of the Society of Systematic Zoology- Issued Sept.,1955 Not Published.

Those fortunate enough to receive a copy of this work will be delighted to have it. It is beautifully arranged and rules may be found interpreted that have been something of a puzzle.

The following papers by Ewald Fromming,Berlin. All are in German, well written and of particular interest to those concerned with the land and freshwater fauna of Europe.
Quantitive Untersuchungen uber die Nahrungsaufnahme der Susswasser0 lungenschnecke Lymnaea stagnalis L.
Pharmazeutische Zeitung-- Der Regenwurm als Versuchstier-Biologische Bemerkungen zu der Abhandlung von Sabalitschka und Marz in Nr. 22 der Pharm. Zeit.
Biologie der Mitteleuropaischen Landgastropoden
Neuere Erkenntnisse uber die Schnecken als Kulturplanzenschadlinge
Die okologischen Beziehungen zwischen unseren Land-lungenschnecken und den Wurmern
Beitrage zur Kenntnis der Nahungswahl grunblattfressender Tiere
Wegschnecken sind keineswegs harmlos
Quantative Untersuchungen uber doe Nahrungsaufnahme der Susswasser--lungenschnecke Lymnaea stagnalis L.
Eine neuer Kulturpflanzenschadling in Mitteleuropa: die Nacht.Milax

We are happy to have the following note:

" The Council of the American Malacological Union, by majority vote, has expressed its preference to hold the 1956 annual meeting on the West Coast. As a result, it is expected that this meeting will be held in San Diego, California, the exact time and location to be announced later as soon as final satisfactory arrangements can be worked out."

Allyn G. Smith, President, A.M.U.

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The following article should be of real interest to us. It should perhaps be mentioned that the species Tapes semidecussata is also now established in San Francisco and Tomales Bays, and possibly elsewhere.

The following article appeared in the Seattle Times of Oct.16, 1955.

" The Manila Clam, Newcomer in Our Sea-Food Family" by Janice Krenmayr.

The rather voluntary appearance in the Pacific Northwest of a new type of clam, called the Manila, or Japanese little neck, has created a new department in this region's " self service counter" of hard-shell clams.

At first, say officials of the Washington State Depattment of Fisheries, discovery of the Manila Clam caused considerable stir, as it was thought to be an entirely new species.

The clam was classified later as Tapes semidecussata and was found to have been an accidental importation,probably crossing the Pacific from Japan with some seed oysters.

While the history of this clam in the Pacific Northwest is not too clear,fishermen know it was observed first in the 1930's in British Columbia. The species was recognized in Washington waters in 1942 and 1943 and gradually went on the commercial market by the end of the Second World War.

After the war the Manilas were found in increasing quantities along Hood Canal and Willapa Harbor. They appeared in lesser quantities in the Strait of Juan de Fuca and farther north.

Except to the practiced eye,it is difficult to distinguish the Manila from the natibe little neck clam. Its only distinguishing features are that it is a bit more elongated,rather than roundish, and the inside edge bears a thin purple band,

The Manila has fine grooves on the outer shell, radiating from the hingeoutward, just as in yhe native little-neck or rock clam. These two are distinguished from the Puget Sound butter clams which, similar to the Eastern quahogs, have thick shells with fine growth lines paralleling the curvature of the edge.

From all indications the Manila clam will do better in warmer waters,though this still is not know definitely. It is not entirely resistent to diseases but seems to have good recovery powers and thus may be a hardy item. The clams grow close to the surface, however, and because of this,their greatest enemy is cold, for they will die in great masses in freezing weather.

Other enemies of the Manila clam are the same as for other shellfish. " Sand Dollars" a type of sea urchin, for a thick carpet which prevents establishment of a clam bed by causing sand to shift and by smothering out clams already established.

Moon snails bore holes in clamsn and eat the meat. Their " collars" often are found on the beach-- large, thin rings of sand cemented into form by the mucuous secretaion of the snail. They are the egg

cases of the moon snail. The eggs lie between the grains of sand.

With the recognition of the Manila clam and its potentialities, Fisheries Department associates were a little apprehensive. Would the new clam encroach on and eventually take over all beaches, driving out the native clams ?

The passage of time has brought a reassuring indication that the Manila is a co-operative, nonagressive type of critter. To all appearances , it does not want to crowd its fellow clams, but simply fills in a void. In several parts of South Puget Sound, where native little necks were dug or killed out, the Manilas came in and filled in the gap.

Another incident supports that impression. In the winter of 1949, there was a heavy kill of Manilas, which take two or three years to return. Meantime, a good ratio of butter clams grew in. Now the Manilas are returning, with no evidence of crowding-- but all are living happily together. If any crowding exists it is more on the side of the butter clams.

It is possible that each clam has its own niche, also. At the state's Point Whitney Laboratory near Quilcene, the beach surveys show numerous butter clams exist on one side of the point and, on the other side, where the bar is less exposed and has smaller gravel and more mud, the Manilas are predominant, with few butter clams.

So the Fisheries Department is happy about the new member of the Pacific Northwest clam family.

For commercial purposes, the Manila clam possesses some drawbacks. It does not live as long out of water as other species and commercially must be handled and shipped within a shorter period. The native little neck has a tighter closure to the shell and, if kept cool, will live about ten days.

To balance this deficiency the Manila clam has an advantage in commerce. It seems to be adapted to mechanical shaking. When it is steamed open , the meat will fall from the shell. You can take these clams into a cannery, steam them, put them on a rotating drum machine and the meat falls through. This saves much manual labor.

An advantageous item to growers is that the Manilas are fast reproducing and fast growing. With a surplus built up there is a tendency to concentrate on them and the state already has extended the season for digging. Manilas now may be dug the year round. Commercially they are being dug in the Willapa Harbor area and Southern Puget Sound.

Not until 1950 were there enough Manilas to provide the ten tons an acre which is the minimum for commercial fishermen. Yield below that figure would be unprofitable.

Thirty tons an acre is considered good digging. A proficient digger, working hard, can dig about 700 or 800 pounds at one tide.

Common usage has accustomed the public to the idea that the whiter the clam meat and its shell, the better it is. For that reason it probably will take time for the general public to accept the Manila clam as readily as the others, since it is slightly yellower and darker in color. However, the general effect is that once he has tried Manilas a person will ask for them the second time, and those who eat them regularly say they are better than the others.

Some of the Seattle sea food restaurants now are consuming the present output and the demand is increasing gradually.

A word to tourists and newcomers: Not just any beach that has clams is accessible to the would be digger.

In Washington State it is lawful to obtain outright ownership to tidal lands.

To reserve stratigically situated areas for public use, the 1955

Legislature set aside a number of pieces of state-owned tidelands. These new public vacation spots are in Willapa Harbor,Hood Canal, Penn Cove, Saratoga Passage, and the San Juan Islands. These are, of course, in addition to those already maintained by the State Parks Commission and the Highway Department.

Pacific Ocean beaches have been reserved for many years to the public, and it there that the razor clams are dug.

Some of these new public recreation spots have several species of shellfish; others a few clams or oysters. Some have legal access only across privately owned land, for which permission must be obtained,or can be approached only by water. It is therefore advisable to ascertain from the State Fisheries Department the legal access to the new public areas.

In order to perpetuate our heritage of shellfish, it is essential that everyone observe legal limits, as well as proper tecniques. Each digger is allowed 20 pounds (about a 12 quart pailful of clams in the shell) or 6½ pounds of opened meats a day.

To safeguard the baby clams, which may be so small that they escape notice, Fisheries Department men urge the following tecnique on the part of diggers.

Do not leave the mounds of earth and water filled holes after digging. Young clams are smothered under these mounds. Refill the holes by raking in lightly to improve beaches for future crops.

Use forks, instead of shovels, to dig. Both implements dig equally well but shovels do much more damage by breakage. The forks loosen the ground, leaving a good growing surface for the young clams.

Because they are so close to the surface, Manilas are dug easily--a simple garden rake will do.

With shellfish forming one third of the sea food production of Washington State waters (oyster first, Dungeness crab second, and clams, shrimps and scallops last) such cooperation by tourists and residents alike will help to conserve the wealth of the sea which makes Washington one of the leading sources of marine foods in the nation."

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An item from the Los Angeles Examiner, Oct. 23,1955

" Tons of Coral-Like Masses Startle Beach Residents"

Sunset Beach, Oct.22-- Marine biologists at the State Department of Fish and Game laboratory on Terminal Island have solved the mystery of the glistening, crackly " sea moss" which waves pitched ashore here last week.

It is neither moss not coral, as many beach residents had supposed, but is the massed colonies of a near-microscopic " moss animal" belonging to the class of Bryozoa.

Dr. Frances Clark, director of the laboratory, and David Joseph, staff marine biologists, examined samples and advised beach residents the smelly " moss" is harmless. High tides and breakers will grind it up and sweep it back into the ocean, the scientists said.

Early last week big breakers dumped tons of the tangled ,moss like material on the beach. A quarter mile of beach at Surfside, where waves are deflected by the Navy mole, was piled to a depth of three feet. Mixed into the tangle were pieces of waterlogged driftwood, large seashells and other objects from the bottom.

The Bryozoa live mostly in the ocean, from shallows down to at least 6000 fathoms, Dr. Clark said. " There are several thousands of kinds of Bryozoa the world over." " They form tremendous colonies that look like moss or delicate seaweed," he declared. " They've been here a long time. Their skeletons are found in rocks back to the Ordovician period in which are found traces of the earliest

fishes". A single member of the colony is called a zooid, so small it could romp around in the eye of a needle.

" A powerful ocean current probably wsept up this mass of Bryozoa from the sea bottom off shore, and breakers carried it to the beach. " The folks at surfside don't need to be afraid. Bryozoa won't bite."

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Captain J. Black of Duniden, New Zealand, died Dec.,1954. Many of us, like myself, wondered why we had not heard from Captain Black and only recently through another collector we learned of his passing.

Captain Bardwell of Broome, Western Australia died recently. He was well known to many of the older collectors and exchanged extensively-in recent years sent rarities for other rarities. His great collection went to the National Museum in Melbourne, Australia.

Mrs. Leona Linderman died on Nov. 3,1955. A host of shell friends will miss her. She is survived by her daughter Mrs. Fred E. Barnett (Maryann) of Honolulu and by her grandson Tim Barhett of Long Beach. The daughter flew to the mainland recently to be with her mother.

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More Publications

Basteria vol. 19, No. 2 en 3, 1955.
Notes on *Succinea avara* (Say) by L.A.W.C. Venmans
Succinea arenaria Bouchard-Chantreaux; ... Annie Anteunis
Faunistische aantekeningen , 4. Over het vermeende voorkomen van *Epitonium trevelyanum* in Nederland. by C.O. Van Regteren Altena.
De fossiele schelpen van de Nederlandse stranden en zeegaten-by C.O. Van Regteren Altena, A. Bloklander en L.P. Pouderoyen.
The Life Cycle and Some Other Biological Details of the Fresh-water snail *Physa fontinalis* (L.) by W.F. De Wit.

The Ecology and Life History of the Pond Snail *Physa gyrina*. By Robert M. DeWitt Ecology, Jan.,1955
Reproduction,Embryonic Development, and Growth in the Pond Snail, *Physa gyrina* Say by the same author- Trans. Am. Mic. Soc. April,1954
The Intrinsic Rate of Natural Increase in a Pond Snail (*Physa gyrina* Say. by the same author- The Amer. Nat. Sept.-Oct.,1954
Reproductive Capacity in a Pulmonate Snail (*Physa gyrina* Say) The Am. Nat. May-June,1954

New Tertiary Pelecypods from Punta Arenas by T. Soot-Ryen. Three new species are described and well figured. This is a reprint from Arkiv For Zoologi 1952

La Collection de Mollusques Testaces Marins de L'L. F.A.N. by Maurice Nickles. A publication of Institut Francais D'Afrique Noire, Dakar,1947.

It is an interesting thing that so very few of these West African species are ever seen in collections, and a number of them are of great value because they are genotypes etc. It has been my good fortune to see a vast number of shells from most of the shores of the earth and when I comment briefly that this check list of the species in this institution lists a good 50% that I have never seen either in my own holdings or in the collections of a number of large institutions whose collections I have studied. To be true the larger and showier species do appear.

Family Naticidae

Shell porcelanous, thick or fairly so
. Operculum shelly .... Natica
. Operculum horny .... Polinices
Shell thin, more or less pellucid
. Shell oval or oblong .... Eunaticina
. Shell depressed, aperture ear-shaped .. Sinum
Shell minute, spire elevated .... Elachisina

Genus Natica

Umbilicus closed by a solid callous pad
. Shell uniformly white
Height 20 mm Bering Sea to San Diego clausa
. Shell yellowish white, faintly banded
Height 14 mm. Esteros Bay to Gulf of Calif. salimba
Umbilicus more or less open
. Shell obliquely depressed
.. Whitish, closely longitudinally lined with chestnut
Diam. 35 mm. Lower Calif. to Ecuador.... elenae
. Shell oblong or globose
.. Surface with fine axial or spiral striations only
... Brownish, a white band on upper part of whorls
Height 20 mm. Gulf of Calif, to Peru.... unifasciata
... Yellowish brown, without color markings in the adult
Height 20 mm. Bay of Panama........ othello
... Peru.......................... undata
. Entire surface with axial plications
.. Fawn color, with 3 articulated dark chestnut bands
Gulf of Calif. to Ecuador .... broderipiana
. Axial plications between shoulder and suture only
.. Fawn color, with 3 mottled white bands
Height 18 mm. Gulf of Calif. to Panama.... catenata
.. Pale brown, with 3 obscure pale bands
Height 17 mm. Bay of Panama .... scethra

Genus Polinices

Umbilicus more or less filled with callus
. Shell depressed
.. Whitish or broadly chestnut banded
Diam. 50 mm. Lower Calif. to Peru.......... glauca
.. Milk white, with obsolete spiral lines
Diam. 9 mm. Galapagos .... littorinus
. Shell oval to globose
.. Whorls flattened
... With an orange colored subsutural band
Height 35 mm. Lower Calif. to Peru ..... otis
... Unicolor, not banded
....Umbilical callus white
Height 57 mm. Crescent City to Chile.... recluziana
.... Umbilical callus purplish brown
Height 40 mm. Monterey to Newport Bay..... alta
.. Whorls quadrangularly compressed at the sides
Height 50 mm Panama..... panamensis
.. Whorls rounded, convex
... Umbilical callus purplish
.... Shell pyriformly ovate,white,solid
Height 35 mm. Gulf of Calif. .... unimaculata

.... Shell ovately globose, bluish or bluish white
Height 35 mm. Galapagos to Peru ..... atracyansis
... Umbilical callus white
.... Shell oblong turbinate, white, solid
Height 35 mm. Gulf of Calif. to Peru..... uber
.... Similar but with a persistent epidermis
Galapagos to Peru .... philippianus
.... Shell ovate, body whorl slopingly shouldered
Peru .... alveatus
.... Shell rounded, ellipsoid, dirty milk white
Height 12.5 mm. Alaska to San Diego caurinus
.... Shell globose
..... Shell large, thick and heavy
Peru and Chile .... dubia
..... Shell small, rather thin
...... Shell polished, white
Height 12 mm. Chile........... strebeli
...... Epidermis minutely spirally banded
Height 16 mm. Monterey to Coronado Islands.. acosmitus
Umbilicus without an entering callus
. Umbilicus largen funnel shaped or cylindrical
.. Whorls with a flattened band at the posterior third
Height 100 mm. British Columbis to Newport Bay... lewisii
.. Whorls obliquely flattened below the sutures
Height 28 mm. Ecuador to Peru .... ravida
.. Whorls flat topped, translucent white
Height 26 mm. Panama to Peru .... agujanus
.. Whorls rounded, convex
... With faint indications of spiral threads
Height 50 mm. Alaska to Laguna..... draconis
... Surface smooth, white
Height 22 mm. Magellan Straits ...... vaginatus
. Umbilicus narrow
.. Shell brownish, with ~~X~~ 2 narrow white spiral bands
Height 45 mm. Cape San Lucas to Acapulco ... bifasciata
.. Shell transparent white, flesh tinged
Height 13 mm. Galapagos .... glabella
.. Shell uniformly white
... Body whorl slightly elongated, wrinkled at suture
Height 15 mm. Panama and Galapagos.... crawfordianus
... Whorls slightly flattened below the suture
Height 6 mm. Chile .... pisiformis
... Whorls constricted in front of sutures
Height 20 mm. Magellan Strait...... constrictus
... Whorls depressed, milk white
Diam. 14 mm. Panama and Galapagos.... pedroanus
... Whorls evenly rounded, convex
.... Surface smooth, polished
Height 17 mm. Peru and Chile .... solutus
.... Upper half of whorls axially wrinkled
Height 8 mm. Alaska to San Diego.... canonicus
.. Shell large, white, with distinct dark markings
Height 50 mm. Galapagos .... macrostoma

Genus Eunaticina
Sculptured with extremely fine wavy spiral striae
Height 35 mm. Oregon Coast to San Diego ..... oldroydii

Genus *Sinum*
Adult shell over 20 mm. in diameter
. Shell white or waxen, inside and out
Diam. 38 mm. Monterey to Todos Santos Bay ... *californicum*
. Inside of shell brownish
.. Shell vert flat, with a minute flattened apex
Diam. 25 mm. Catalina to Gulf of California... *debile*
.. Shell moderately elevated
Diam. 50 mm. Panama to Peru...... *concavum*
Adult shell less than 10 mm. in diameter
. White, sculptured with sharp spiral grooves- shell suborbicular
Diam. 6.5 mm. Catalina .... *keratium*
. Grayish white, sculpture microscopic- shell depressed
Diam. 9 mm. Catalina to Panama....... *pazianum*

Genus *Elachasina*
Sculptured with fine, uniform striae
Height 3 mm. San Diego .... *grippi*

Genus *Natica* Scopoli,1777 Type (by subsequent designation, Harris, 1897), *Nerita vitellus* Linnaeus (*Natica rufa* Born of authors)- fide Woodring,1928, p.377.

Natica broderipiana Recluz,1847 Cerros Id. to Ecuador
" *catenata* Philippi,1851 Gulf of Calif. to Ecuador
" *chemnitzii* Pfeffer Gulf of Calif. to Peru
" (*Cryptonatica*) *clausa* Brod. & Sby.,1829 Bering Sea to San Diego
" *colima* Strong and Hertlein,1937 West Mexico
" *elenae* Recluz,1843 Lower Calif. to Ecuador
" *idiopoma* Pilsbry & Lowe1932 Nicaragua
" (*Cochilis*) *othello* Dall,1908 Bay of Panama
" (*Cryptonatica*) *salimba* Dall,1919 Esteros Bay to Gulf of Calif.
" (*Cochilis*) *scethra* Dall,1908 Bay of Panama
" *undata* Philippi,1852 Peru

Genus *Polinices* Montfort,1810 Type (by original designation) *Polinices albus* Montfort (= *Helix mamillaris* Linnaeus,1767).

Subgenus *Euspira* Agassiz in Sowerby,1838. Type (by subsequent designation, Dall,1908,1909), *Natica glaucinoides* Sowerby, not Desh. (= *Natica labellata* Lamarck). (fide Grant and Gale, p.803)

Subgenus *Neverita* Risso,1826. Type (by monotypy), *Neverita josephina* Risso.

Polinices (*Euspira*) *acosmitus* Dall,1919 Monterey to Coronado Ids.
" " *agujanus* Dall,1908 Panama to Peru
" " *canonicus* Dall,1919 Alaska to San Diego
" " *caurinus* (Gould),1847 Puget Sound to San Diego
" " *constrictus* Dall Magellan Straits
" " *crawfordianus* Dall,1908 Panama and Galapagos
" " *draconis* Dall,1903 Alaska to Laguna
" " *lewisii* (Gould),1847 Brit.Columbia to San Dgo.
" " *litorinus* Dall,1908 Galapagos
" " *pallidus* (Brod. & Sby.),1829 Arctic Sea to Cortez Bank
" " *pardoanus* Dall,1908 Panama & Galapagos
" " *pisiformis* (Recluz),1843 Chile

(con.)
Polinices (*Euspira*) *solutus* (Gould),1848 Peru and Chile
" " *strobeli* Dall,1908 Chile

Polinices (*Neverita*) *alta* Dall Monterey to Lower Calif.
" " *alveatus* (Trochel),1852 Peru
" " *bifasciata* (Gray) Gulf Calif. to Acapulco
" " *crickmagi* Palmer & Hertlein Galapagos
" " *dubius* (Recluz),1843 Peru & Chile
" " *glabella* (Reeve),1855 Nicaragua & Galapagos
" " *glauca* (Lesson),1826 Lower Calif. to Peru
" " *intermorata* Philippi,1857 Gulf Calif. to Panama
" " *macrostoma* (Philippi),1852 Nicaragua & Galapagos
" " *otis* Brod. & Sby.,1929 Lower Calif. Peru
" " *pananensis* (Recluz),1843 Panama
" " *philippianus* (Nyst),1845 Galapagos,Chile
" " *ravidus* (Eydoux & Souleyet),1852 Ecuador,Peru
" " *recluzianus* (Deshayes),1839 Crescent City,Chile
" " *rupulumlima* Pils.,1933 Panama
" " *uber* Val.,1833 Gulf Calif. to Peru
" " *uninaculatus* Reeve Gulf of Calif.

Genus *Eunaticina* Fischer,1855
Eunaticina *oldroydii* Dall,1897 Oregon to San Diego
" *heimi* Hordan,1936 Galapagos

Genus *Sinum* Roding,1798
Sinun *californicum* Oldroyd,1917 Monterey to Todos Santos Bay
" *concavum* (Lanarck),1822 Panana and Chile
" *debile* Gould,1852 Catalina to Gulf of Calif.
" *keratiun* Dall,1919 Catalina
" *noyesii* Dall Nicaragua, Panama
" *pazianus* Dall,1919 Catalina to Panana
" *sanctijohannis* Pils. & Lowe,1932 Nicaragua

Genus *Elachisina* Dall,1918
Elachisina *grippi* Dall,1918 San Diego

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

November 1st, 1955

Mr. John Fitch, President, called the meeting to order at 7:45PM and welcomed forty persons to our November gathering.

Mrs. D.B. Brooks, Treasurer, reported that a recent addition in membership has increased our roster to sixty paid memberships for the current year.

Mr. John Q. Burch, Editor of "The Minutes of the Conchological Club of Southern California", explained the function and distribution of this widely circulated scientific publication for the benefit of our newer members. All members should be interested in contributing articles of interest to Conchologists throughout the world as well as helping to support this worthwhile endeavor by subscribing to this informative and educational journal.

Mrs. Rose Burch, Mrs. Mary Turver and Mr. George Kanakoff, Nominating Committee, submitted the following as officers for 1956:

Mr. John Fitch, President
Dr. N.P. Maddox, Vice-President
Miss Florence Thurlow, Secretary
Mrs. D.B. Brooks, Treasurer

It was moved, seconded and carried that your Secretary cast a unanimous ballot for these choices.

Mr. and Mrs. John Q. Burch offer their home as a meeting place for our annual Christmas gathering. Miss Bessie Falconer and Mrs. Dorothy Brown volunteered to act as hostesses in charge of refreshments, As in previous years, names were exchanged for shell gifts. Members not in attendance at this exchange of names, should bring a wrapped shell gift to our December meeting to be held at 4206 Halldale Ave., Los Angeles, 62.

Mr. and Mrs. French gave a report on a recent trip to Cholla Bay and members planning to attend the Thanksgiving Holiday field trip to this location were informed of the latest requirements and necessities needed for this outing.

Dr. N.P. Maddox gave a short talk on the collecting of Brachiopods in this area. The Valero IV, research vessel of the Hancock Foundation was the base of operations and the splendid equipment was shown to us in a series of colored slides. Approximately thirty collections were made, primarily on the East side of Catalina Island, resulting in the acquisition of four distinct species. Specimens ranged from a depth of 30 to 80 fathoms, but these figures are not to be taken as range limitations. Slides of specimens as well as part of the material collected was shown and duplicate specimens of several species were offered to members interested in this material.

Mr. George Kanakoff spoke to us of rare Molluscan occurrences in this area as well as freaks, caused by mantle injuries resulting in these abnormal specimens. Numerous collections of the speaker were displayed and explained, among them, new species as well as more familiar material, Mr. Kanakoff was again emphatic in stressing the importance of collecting in long series to avoid confusion in nomenclature or identity. This rule applies not only in collecting fossil specimens, but includes the building of a collection of contemporary species.

The meeting was adjourned at 10:00PM by Mr. Fitch.

D.L. Burford, Secretary

MINUTES 153

DEC. 1955

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif.

All interested persons are cordially invited.

Please mail all news to your editor,- John Q. Burch,
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Los Angeles 62, Calif.
Telephone Ax 3-5710
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There will be no regular open meeting in December, but our annual Christmas party for members only will be held at the home of Mr. and Mrs. John Q. Burch at 4206 Halldale Ave., Los Angeles.

Family Columbellidae

Key to Genera of the Family Columbellidae

Shell coniform, aperture long and narrow... *Paramentaria*
Shell strombiform to ovate
. With both posterior and anterior canal
.. Shell with both axial and spiral sculpture.. *Microcitharia*
.. Sculptured with spiral striae on the canal only *Bifurcium*
. With anterior canal only
.. With spiral sculpture only
... Spire short, shell thick and heavy .... *Pyrene*
... Spire as long or longer than aperture, shell smaller .... *Mitrella*
.. With axial and spiral sculpture
... Shell 8 mm. or more in length ..... *Anachis*
... Shell less than 8 mm. in length ...... *Seminella*
Shell subcylindric, columella and canal short .. *Aesopus*
Shell tapering, body whorl swollen ..... *Strombina*
Shell bucciniform, lip sharp or only slightly thickened
. With reticulated sculpture ...... *Amphissa*
. With fine spiral sculpture only ..... *Cosmioconcha*

Genus *Paramentaria* Dall,1916
Paramentaria concinnata (Crosse),1858 Central America
" *coniformis* (Sowerby) Gulf of California
" *dupontii* (Kiener) Gulf of Calif. Tryon,v 5, pl.60

Genus *Microcitharia* Fischer,1884
Shell yellowish whiten with irregular chestnut marks
15 mm. Panama .... *harpaeformis*
Shell fulvous olive, freckled with pale dots
11 mm. Acapulco to Central America .... *uncinata*
Tryon, vol.5, p. 196

Microcitharia harpaeformis (Sowerby),1832 Panama
" *uncinata* (Sowerby),1832 Acapulco to Central America

Genus *Bifurcium* Fischer,1884
Shell pale livid, with longitudinal lines. Panama and Galapagos
Tryon vol. 5, p.183
Bifurcium bifurcium Fischer Panama Montijo Bay (Lowe)

Genus *Pyrene* Roding,1798 Type (by monotypy), *Pyrene rhombiferum* Bruguiere = *Voluta discors* Gmelin.

Key to Species of Pyrene

Whorls channeled between the shoulder and suture
. Shell chocolate brown with fine white dots
28 mm. Panama to Peru ...... *paytensis*
Tryon, vol.5, p. 104
. Shell chestnut brown with white spots, orange within
21 mm. Central America, Galapagos .... *castanea*
Tryon, vol.5, p. 105

(Con.)

Body whorl swollen at the shoulder, not channeled
. Shell chestnut with large white blotches
35 mm. Gulf of Calif. to Peru ..... strombiformis
Tryon, vol.5, p. 104
. Shell brownish with small white dots
32 x 21 mm. Gulf of Calif. to Peru..... major
Tryon, vol.5, pl.42, fig. 6-9
. Shell chestnut with broad white markings, orange within
25 mm. Gulf of Calif. to Panama ...... haenastoma
Tryon, vol.5, p. 106
Body whorl regularly rounded
. Brown with irregular white markings
22 mm. Cape San Lucas, Galapagos .... fuscata
Tryon, vol. 5, p. 105
. Ash colored with narrow chestnut spiral lines
25 mm. West Columbia ...... labiosa
Tryon, vol.5, p. 106
. Longitudinally streaked with white and chestnut
9 mm. Cape San Lucas to Panama ..... lucasana (festiva)
Tryon, vol.5, p. 106

Pyrene castanea (Sowerby),1832 Central America, Galapagoa
" fuscata (Sowerby),1832 Gulf of Calif. to Panama
Angeles Bay, Gulf of Calif.,Santa Elena,Ecuador
Hood Id., Galapagos
" haenastoma (Sowerby),1832 Gulf of Calif. to Panama
" lucasana (Dall) Cape San Lucas to Panama San Juan del Sur
" labiosa (Sowerby),1832 Central America to Ecuador
" major (Sowerby),1832 Gulf of Calif. to Peru
" paytensis (Lesson),1832 Panama to Chile
" strombiformis (Lamarck),1822 Gulf of Calif. to Peru

Genus Mitrella Risso,1826 Type (by subsequent designation,Cox, 1927), M. flaminea Risso= Murex scriptus Linnaeus

Key to Species of Mitrella
Spiral sculpture extending over the last three whorls
9.4 x 3.4 mm. Gulf of Calif..... granti
Proc. San Diego Soc. Nat. Hist.,vol.8, p.20
Spiral sculpture confined to the base and canal
. Body whorl with a sharp carina at the shoulder
10 x 5 mm. San Francisco to Cape San Lucas ... carinata
Oldroyd, vol. 2, part 1, p. 272
. Body whorl without carina
.. Shell stout, the spire about equalling the aperture in length
... Variously marked with varying shades of brown
10 x 5 mm. Forrester Id.,Alaska to Mexico californiana
... Pale brown, irregularly spotted with yellowish white
8 x 3.75 mm. Alaska to San Diego..... gouldii
Oldroyd, vol.2, part 1, p. 277
... Bluish white, epidermis yellowish
14 x 7 mm. Alaska to San Diego...... pernodesta
Oldroyd, vol.2, part 1, p. 275
... Pale, sometimes with pale brown variations
7 x 3.5 mm. Fuca Straits to Coronado Ids.... luculenta
Oldroydn vol.2, part 1, p. 277

(Con.)

... White, more or less clouded with chestnut
8 mm, Cape San Lucas to Gyacomyo.... santabarbarensis
Tryon, vol.5, page 118

... Minutely punctate with orange spots arranged in quineunx
7.5 mm. Cape San Lucas to Panama.... millepunctata
Tryon, vol.5, p. 198

... Brownish with chestnut dots arranged in protractive rows
5.5 x 2.3 mm. Gulf of Calif....... lalage
Proc. Phil. Acad. Sci., vol. 84, p.70

... Livid, with divaricating orange brown lines
6.25 mm, Cape San Lucas .... densilineata
Tryon, vol.5, page 115

... White, with 1 to 3 bands of chestnut tessellations
6 mm. Gulf of Calif. to Panama.... baccata (cervanella)
Tryon, vol.5, p. 114

... Uniformly chestnut brown
Gulf of Calif. .... dorma B. H. & B.

... White, with a central band of brown blotches
3.4 x 1.8 mm Acapulco to Panama..... hartfordi S. & H.

... Yellowish, with white dots on the spire
7 mm. Panama ..... elegans
Tryon, vol.5, p. 115

... Transparent white with a spiral row of milk white dots
7 mm. Galapagos .... rorida
Tryon, vol.5, p. 147

... Reddish fulvous, white next the suture
13 mm. Guayaquil........ electroides
Tryon, vol.5, p. 117

... Chocolate with a lighter band on the periphery
12 mm. Chile and Peru .... unifasciata
Tryon, vol.5, p. 116

... Uniformly chocolate or chestnut
12 mm. Peru and Chile .... unicolor
Tryon, vol.5, pl.47, fig. 41

.. Shell slender, conic, spire longer than the aperture

... Periphery of the body whorl angulated

.... Shell pale, unicolor
8 x 3.5 mm. Alaska to Gulf of Calif. .... tuberosa
Oldroyd, vol.2, part 1, p. 271

.... Shell yellowish
9 x 4 mm. San Diego .... casciana
Oldroyd, vol.2, part 1, p. 274

... Periphery of the body whorl rounded

....Adult shell more than 15 mm. in length

..... Waxen white with reddish paintings
18 x 6 mm. Cape San Lucas ...... xenia
Proc. USNM, vol. 56, p. 330

..... Yellowish white with narrow chestnut lines
24.5 x 10 mm. Gulf of Calif. ...... nasuta
Tryon, vol.5, p. 136

..... White, variegated with brown flashes
19 mm Gulf of Calif. ..... acicula
Tryon, vol.5, p. 119

.... Adult shell less than 10 mm. in length

..... Light rufus or yellowish, with faint markings
7/5 mm Puget Sound to Mexico...... hypodra
Oldroyd, vol.2, part 1, p. 275

(Con.)

..... Yellowish with brown markings
5 x 2.5 mm. San Diego to Magdalena Bay ... callimorpha
Oldroyd, vol.2, part 1, p. 274

..... Yellowish horn with zig-zag brown lines
3.2 x 1.5 mm. San Clemente & Catalina Islands.. clementensis
Proc. USNM, vol.70, p.2

.. Shell oblong-pyramidal, apex truncate in the adult

... Reticulated with chestnut or chocolate and white
17.5 x 6 mm. Gulf of Calif. to Peru..... ocellata
Tryon, vol.5, p.122

... Shell paler, more slender, with flatter whorls
Gulf of California to Panama..... delicata
Reeve, pl.27, fig. 171

Genus Mitrella Risso,1826
Mitrella carinata (Hinds),1844 Forrester Id. to Salina Cruz
" var. californiana (Gaskoin),1852
var. gausapata (Gould),1950
" acicula (Reeve),1858 Gulf of Calif.
" aurantiaca (Dall),1871 Monterey to Magdalena Bay
" baccata (Gaskoin) Gulf of Calif. to Panama
" callimorpha (Dall),1919 San Diego to Magdalena Bay
" casciana (Dall),1919 San Diego
" clementensis (Bartsch),1927 Catalina, San Clemente Ids.
" delicata (Reeve),1858 Gulf of Calif. to Panama
" densilineata (Carpenter),1964 Cape San Lucas
" dorma B. H. & S. Gulf of California
" electroides (Reeve),1858 Galapagos
" elegans (Dall) Panama
" gouldii (Carpenter),1857 Alaska to Lower Calif.
" granti Lowe,1935 Gulf of California
" hartfordi Strong & Hertlein,1937 Mexico to Panama
" hypodra (Dall),1916 Puget Sound to Mexico
" lalage Pilsbry & Lowe,1932 Gulf of California
" lutulenta (Dall),1919 Fuca Straits to Coronado Ids.
" millepunctata (Carp.),1854 Gulf of Calif. to Panama
" nasuta (Menke),1850 Gulf of California
" ocellata (Gmelin),1791 Gulf of Calif. to Peru
" var. baileyi Bartsch & Rehder,1939 Galapagos
" permodesta (Dall),1890 Alaska to San Diego
" pulchrior (C.B. Adams),1852 Panama
" rorida (Reeve),1858 Galapagos
" santabarbarensis (Carp.),1856 Gulf of Calif. to Panama
" tuberosa (Carp.),1865 Puget Sound to Mexico
" unicolor (Sowerby),1832 Panama to Peru
" unifasciata (Sowerby),1832 Chile
" xenia (Dall),1919 Cape San Lucas

Genus *Anachis* H. & A. Adams,1853 Type (by subsequent designation, Tate,1875), *Columbella scalarina* Sowerby.

Key to Species of Arachis

Shell more than one half inch in length
. Spiral sculpture faint or wanting on the spire
.. Axial ribs nodulous at the shoulder or suture
... Axial ribs short, not continuous over the whorls
.... Axial ribs straight
Yellowish white with zigzag dark lines
13 x 6 mm. Cerros Island to Panama.... *coronata*
.... Axial ribs curved on the body whorl
White with close longitudinal chocolate markings
21 x mm Panama to Peru.... *fluctuata*
... Axial ribs continuous to the periphery
.... Axial ribs narrow, sharp
Yellowish white, two spiral bands of chestnut spots
18 x 3 mm Lower Calif. to Panama.... *lyrata*
.... Axial ribs narrow, sharp
Yellowish brown, closely reticulated with chestnut
16 x 7 mm. Gulf of California to Chile.... *varicosa*
.... Axial ribs flattened in the middle
Purple brown, spotted or banded with white
16 x 8 mm. Mazatlan .... *pachydermata*
.. Axial ribs not nodulous at the shoulder
... Axial ribs fine, close spaced
Variously marbled, with an ill-defined central white band
25 x mm Gulf of Calif. to Panama.... *varia*
... Axial ribs strong, wide spaced
.... Spiral sculpture confined to the canal
Pale brown or white
15 x 6 mm. Galapagos .... *fusidens*
.... Spiral sculpture on both base and canal
..... Axial ribs on the body whorl 11, on the spire 20
Blackish with a peripheral band of white blotches
13.5 x 5.5 mm. Gulf of California... *sanfelipensis*
..... Axial ribs about 13 on all whorls
Flesh colored with blotches of brown between the ribs
17 x 6.5 mm. Nicaragua .... *decimdentata*
. Spiral sculpture distinct on all whorls
.. Axial ribs nodulous at the shoulder or suture
... Axial ribs confined to the upper half of the body whorl
Whitish, chocolate clouding on the back of the body whorl
18 x mm Gulf of Calif. to Peru...... *rugosa*
... Axial ribs continuous to the periphery
.... Whorls strongly swollen below the suture
Nearly black with a white peripheral band
13.5 x 6.5 mm. Panama ..... *gilva*
.... Whorls shouldered, somewhat inflated
Brown with a white band below the suture
22 x 10 mm. Gulf of Calif. to Panama.... *scalarina*
.. Axial ribs not nodulous at the shoulder
... Yellowish white, two spiral rows of brown spots noduloud
20 x mm. Gulf of Calif. to Peru .... *lentiginosa*
... ?
Cobered with irregular chocolate markings
13 x mm Panama to Peru.... *rugulosa*

... ?
Blackish brown, ribs yellowish
15 x mm. Central America...... pardalis
Shell from one fourth to one half inch in length
. Spiral sculpture faint or wanting on the spire
.. Axial ribs nodulous at the shoulder or suture
... Ribs becoming obsolete on the body whorl
White with longitudinal chestnut streaks or spots
10 x mm. Peru ...... suffusa
... Ribs becoming obsolete toward the middle of whorls
White and chestnut in alternating interrupted bands
10 x mm. Galapagos .... varians
.. Axial ribs not nodulous at the shoulder
... Spiral sculpture confined to the canal
.... Axial ribs 11-12, rather broad, rounded
White, narrow brown spiral lines and peripheral spots
8 x 3.5 mm. Gulf of California ..... bartschi
.... Axial ribs about 14, narrow, sharp
White
9 x 3.5 mm. Salina Cruz ..... phanea
... Spiral sculpture on both base and canal
.... ?
Mottled reddish brown, a peripheral row of white spots
7.5 x 3 mm Panama..... gracilis
.... ?
Blackish with waved yellowish axial lines
10 x 5 mm. Gulf of California... nigrofusca
. Spiral sculpture distinct on all whorls
.. Axial ribs nodulous at the shoulder or suture
... ? Dark chocolate with a white sutural band
9 x mm. Gulf of California.... spadicea
... ?
White, punctate with black
11 x 6 mm. Panama....... nigropunctata
.. Axial ribs not nodulous at the shoulder
... Spiral sculpture of raised cords
.... Axial ribs about 16
Flesh colored, blotched and streaked with brown
7.7 x 3.4 mm. Ecuador .... whitei
.... Axial ribs about 20
Marbled with black, yellow and white,nodulous
8.3 x 3.9 mm. Nicaragua .... hilli
.... Axial ribs indistinct, undulated
Brownish, maculated with purple
7 x 3 mm. Mazatlan .... serrata
... Spiral sculpture of incised lines
.... Axial ribs extending to the canal
Nearly black with 10 lighter colored ribs
9 x 3.5 mm Nicaragua to Panama.... carmen
.... Axial ribs fading out at the base
..... Axial ribs 7 or 8
White with fuscous lines or maculations
6.5 x 3 mm Acapulco..... humerosa
..... Axial ribs 10 to 20 distinct
...... All incised spiral lines cutting the ribs into nodules
Irregularly mottled with brown,orange or flesh color
7 x 3.3 mm Panama..... tabogaensis

...... A single incised line cutting the posterior end of ribs
Black, sometimes with a light median band
8 x mm. Panama .... nigricans
...... Incised lines confined to the interspaces
.... All sculpture obsolete on the back of the body whorl
Blackish,lighter on the back of the body whorl
7.5 x 2.75 mm. Panama ..... moesta
.... ?
Dark chocolate, obscurely spotted with white nodules
10 x mm. Panama and Galapagos .... atramentaria
.... ?
Yellowish brown with a chestnut superior band
8 x mm. Central America...... milium
..... Axial ribs numerous, fine, principally on upper whorls
...... ?
With alternating white and brown spiral bands
6.2 x 2.75 mm Gulf of Calif. to Galapagos... incerta
...... ?
Pale,flamed and spotted with fulvous orange
12 x mm. Central America, Galapagos .... elegantula
Shell less than one fourth inch in length
/ Spiral sculpture faint or wanting on the spire
.. Axial ribs nodulous at the shoulder or suture
... Yellowish, fine lines and blotches of chestnut
6 x 3 mm. Gulf of California .... taeniata
.. Axial ribs not nodulous at the shiulder
... Axial ribs distinct, extending to the periphery
.... Axial ribs oblique
White, with three spiral rows of chestnut spots
6 x 3 mm. Gulf of California to Peru... pygmaea
.... Axial ribs nearky vertical
..... ?
Uniformly reddish brown
23 mm. Gulf of Calif. to Panama ..... fulva
..... ?
Whitish, base deep orange red
3.5 x 2 mm Mazatlan .... rufotincta
..... ?
White, with blood red spots
6 x mm Central America .... cruentata
.... Axial ribs obsolete on the upper part of the whorls
White with two broad brownish orange bands
5 x 2.5 mm Panama....... conspicua
.... Axial ribs indistinct
Greenish white with zigzag chestnut lines
3.25 x 1.5 mm Mazatlan...... albonodosa
. Spiral sculpture distinct on all whorls
.. Axial ribs nodose at the shoulder or suture
... White, tinged with orange below the suture
5 x 2 mm Cape San Lucas .... tincta
.. Axial ribs not nodulous at the shoulder
... Incised spiral lines cutting the axial ribs
.... ?
Yellowish, with the base and canal chestnut
4 x 1.75 mm Gulf of Calif. to Panama.... diminuta
.... Axial ribs about 12
Yellowish, marbled with chestnut
5 x 2 mm Santa Barbara to Gulf of Calif..... penicillata

.... Axial ribs about 16
Chestnut, darker on the posterior half of the base, nodulous
6 x 3 mm Ecuador...... strongi
.... Axial ribs about 20
Flesh color, anterior third of the base brown
5.3 x 2.8 mm. Ecuador........ reedi
... Incised spiral lines confined to the interspaces
.... Axial ribs distinct
..... Axial ribs about 15
Yellowish, a zone of chestnut spots above the periphery
6 x 3 mm Panama ..... dalli Bartsch
..... Axial ribs about 12 ...... sinaloa S. & H
.... guerroensis S&H
..... Axial ribs about 20
Purple brown, maculated with white
3.25 x 1.25 mm San Pedro to San Diego... subturrita
.... Axial ribs faint, subobsolete
Livid, shining, with a chestnut band.
3.25 x 1.1 mm. Cape San Lucas ..... fuscostrigata

Species not placed in the above key
Anachis coronata hannana Hertlein and Strong 1951 Cape San Lucas
" ritteri " " West Mexico
" feevani " " Acapulco
" rehderi " " West Mexico

List of Species of Anachis
Anachis coronata (Sowerby),1832 Cerros Id. to Panama
" rugosa (Sowerby),1832 Gulf of Calif. to Peru
" lentiginosa (Hinds),1844 " "
" scalarina (Sowerby),1832 " to Panama
" varicosa (Gaskoin),1852 (costellata) Gulf Calif. to Chile
" lyrata (Sowerby),1832 (terpsichora) " to Peru
" varia (Sowerby),1832 Gulf of Calif. to Panama
" nigrofusca (Carp.),1857 Gulf of Calif.
" spadicea (Philippi),1846 "
" pachydermata (Carp.),1857 "
" gilva (Menke) " to Central America
" vexillum (Reeve) "
" hilli Pils. & Lowe,1932 "
" sanfelipensis Lowe,1935 "
" decimdentata Pils. & Lowe,1932 Nicaragua
" varians (Sowerby),1832 Galapagos
" nigropunctata (Sowerby),1832 "
" elegantula (Morch) "
" fusidens Dall,1908 "
" suffusa (Sowerby),1832 Peru
" (Seminella) penicillata Carp.,1865 San Pedro to Gulf of Calif.
" " subturrita Carpenter,1866 San Pedro to Tres Marias
" " fredbakeri Pils. Lower Calif.
" " pygmaea (Sowerby),1832 Gulf Calif. to Peru
" " carmen Pils. & Lowe,1932 " to Panama
" " nigricans (Sowerby),1844 " "
" " diminuta (C.B. Adams),1852 " "
" " serrata Carp.,1857 Magdalena Bay
" " albonodosa Carp.,1857 Gulf of Calif.
" " taeniata (Philippi) "

Anachis	(Seminella)	bartschii Dall	Cape San Lucas
"	" "	fuscostrigata Carp.,1864	Cape San Lucas
"	"	tincta Carp.,1864	"
"	"	rufotincta Carp.,1864	Mazatlan
"	"	inserta (Stearns),1892	Gulf Calif., Galapagos
"	"	humerosa Carp.,1865	Acapulco
"	"	sinaloa Strong & Hertlein	Gulf of Calif.
"	"	guerroensis Strong & Hertlein	Acapulco
"	"	treva B.H. & S.	Tres Marias Islands
"	"	phanea Dall,1919	Salina Cruz
"	"	milium Dall	Central America
"	"	cruentata (Morch),1861	Central America
"	"	conspicua (C.B. Adams),1852	Panama
"	"	gracilis (C.B. Adams),1852	"
"	"	moesta (C.B. Adams),1852	"
"	"	atramentaria (Sowerby),1844	Galapagos
"	"	tabogaensis Bartsch,1931	Panama
"	"	dalli Bartsch,1931	"
"	"	whitei Bartsch,1928	Ecuador
"	"	reedi Bartsch,1928	"
"	"	strongi Bartsch,1928	"
"		fluctuata (Sowerby)	Corinto to Peru
"		rugulosa (Sowerby)	Panama to Peru
"		fulva (Sowerby),1832	Gulf Calif. to Panama

Not Placed in Key

Columbella boivini Kiener- Coq. Viv. pl.11, fig.5; Famille des Purpuriferes,p.3, pl.11, fig.1. Sowerby, Thes. Conch., pl.38, p.126, fig. 100. Reeve, Conch. Ic. pl. sp. 43. Tryon, Man. Conch vol.5,p.112. Tryon gives C. sowerbyi as a synonym.

Columbella vexillum Reeve. Conch. Ic., fig.57. Given as of Sowerby by later authors. Carpenter, SMC, p.567 says no authority.

Columbella encaustica Reeve. Conch. Ic. pl. sp.56, vol.5, p. 164 Questions the locality.

Anachis tilamen Dall/ Find no reference to a description.

Anachis adelinae Tryon. Tryon, vol.5, p. Very doubtful if west coast.

Columbella parioloda Duclos. Tryon, vol.5, p.168, gives equal atramentaria.

Columbella deshayesi DeFolin. Fronds de la Mer, vol. 1, pl.11, pl.1, fig.5. May be a form of A. Pygmae.

Anachis nigricans Sowerby. Omitted from key.

Publications Received

Phylogeny in the Planorbidae by Bengt Hubendick- From the Transactions of the Zoological Society of London Vol. 28- Part 6, Sept.,1955.

This work is of folio size, 90 pages , 210 figs. It is a very scholarly work not only on the systematics of the family worldwide, but the generic divisions are illustrated by anatomical drawings. This work will add greatly to the work by Baker in The Molluscan Family Planorbidae, Baker's work was fine but lacking in many particulars, and this family is being intensively studied at this time and properly so since it is the known host of numerous parasites including the schistosomes.

Anatomy of the Gastropoda By Bengt Huvendick- From the Transactions of of the Linnean Society of London, Vol. I , Part 3, 1955.

Folio, 19 pages and 95 text figs. This is a further treatise on the anatomy of a number of groups from the material of the Percy Sladen Trust Expedition to Lake Titicaca.

Ohio Fossils by Aurele La Rocque and Mildred Fisher Marple- Bulletin 54 of the Division of Geological Survey, Columbus, Ohio, 1955.

Quarto 152 pages, 413 figs. The work is excellent, the cuts clear, and keys to species are included under each division.

It is for sale from the Ohio Division of Geological Survey, Room 106, Orton Hall, Ohio State University, Columbus 10,Ohio for 97¢ plus 3¢ for Ohio residents.

A Report on the Family Mytilidae (Pelecypoda) by Tron Soot-Ryen. Allan Hancock Pacific Expeditions, Vol. 20, No. 1- 175 pages, 10 plates and 78 text figs.

This is the long expected and badly needed revision of the Mytilidae of this coast, All west coast collectors or others who are interested in the fauna should have this fine work. It is but fair to comment though that you will certainly find yourself changing most of the labels in your collection at this time. An excellent and easily followed Key to Genera is followed throughout with Keys to Species under each group. The plates are clear making assignment to species an easy matter. An extensive bibliography of references is given.

In short, this is the type of monograph we all wish we had on every family.

The price of the book is but $3.25 and may be had from John Q. Burch.

A Report on the Family Arcidae (Pelecypoda) by Helen Rost. Allan Hanock Pacific Expeditions Vol. 20, No.2 pp 177 -248, 6 plates, 17 figs. 1955. As the above this is a revision of the Arcidae of this coast. The photographic figures are excellent, and this is another work that should be in every conchological library.

The price is $1.75 and copies may be had from John Q. Burch.

Catalogo Descriptivo De Fisurelidos Chilenos by Prof. Francisco Riveros Zuniga Revista De Biologia Marina -Estacion De Biologia De La Universidad De Chile- Valparaiso,1951.

This is an extensive coverage of the Fissurellidae of Chile. 37 species are discussed and figured as well as subspecies. The author also includes a table of synonymy which is of great value. It is a very useful work. The text is in Spanish.

A Historical Review of the Mollusks of Linnaeus Part 3. The Genera Bulla and Voluta of the Class Gastropoda by Henry Dodge. Bulletin of the American Museum of Natural History, vol. 107, Art. 1, New York,1955. 157 pages . Price $2.00. May be had from John Q. Burch.

This work is an extremely valuable contribution, and any person interested in systematic zoology in any field would do well to read it from cover to cover. Having accepted the " Systema Naturae" of 1758 as the basic work of binomial nomenclature it is well to consider the countless problems involved in the species listed.

The Nautilus, Vol. 69, Oct.,1955, No.2.
The Proposed introduction of predatory snails into California by Albert R. Mead.

This paper will be of interest to all of us in California and especially since I rather immagine it will come as news to most of us that there had even been a proposal to introduce the predatory Gonaxis kibweziensis (E.A. Smith) into our state. In any event I know just the place to start them and if they are fond of nice fat Helix aspersa and that is the Burch family flower gardens.
New and Little-Known Mexican Helicidae (Mollusca,Pulmonata) by Alan Solem. The illustrations are excellent and the descriptions clear. It is fair to expect a large number of new species to be found in the relatively unworked vast stretches of Mexico.
Anatomy of the Venezuelan Gastropod, Doryssa kappleri by R. Tucker Abbott.
Another Floridan Conus by H.A. Pilsbry. The species is Conus mcgintyi. The species is said by Dr. Pilsbry to be close to but distinct from Conus mazei Deshayes. It is safe to assume that neither are to be seen in many collections.
Some Malacologists of the New York Area by Methilde P. Weingartner. A discussion and outline of the work of the early conchologists of any section is of interest and similar papers should be available on other districts.
A New Clam Industry in New England by Henry D. Russell. It is surprising to some of us that the species Arctica islandica should be dredged in commercial quantities and shipped as far as this coast.
Minnesota Land Snails by Charlotte Dawley
Some Ecological Factors of the Soil Affecting the Distribution and Abundance of Land Snails in Eastern Virginia by John B. Burch.
The Mollusks of Warm Springs, Georgia by Margaret C. Teskey

Pleurotomaria adansoniana Crosse and Fischer. In the 1955 report of the Liverpool Museum there is an excellent photographic plate of this species with the note " One of some six examples known to science: found in a curio shop in Barbados by the late S. Archer and presented to Liverpool Museums in 1901".

There have been some recent accounts of taking this species in the West Indies and it would be interesting to have an idea of how many specimens are actually in collections today.

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Philadelphia Shell Club- We are happy to greet this newest of shell clubs and know that they will have some interesting work to report with Dr. R. Tucker Abbott as president; Charles B. Wuryz , vice president; John D. Parker, historian; Virginia Orr, secretary-treasurer, and Anne Harbison, councilor-at-large.

MINUTES 154
JAN. 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif.

All interested persons are cordially invited.

Please mail all news to your editor:- John Q. Burch,
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Officers for the year 1956

Mr. John Fitch, President
Dr. N.P. Mattox, Vice-President
Miss Florence Thurlow, Secretary
Mrs. D.B. Brooks, Treasurer

Minutes of the Conchological Club of Southern California-Dec. 6

This year the annual Christmas Party of the Conchological Club of Southern California almost had the members believing in Santa Claus again. Fifty guests squeezed into the gayly decorated home of Mr. and Mrs. John Q. Burch on the evening of Dec. 6th. Santa's helper, better known to us as Rose Burch, distributed exchange gifts from a large and intriguing pile of packages. Delicious refreshments were spread on two festive tables by Miss Bessie Falconer, Mrs. Jeanne

Cate and Mrs. Dorothy Brown were so enticing we forgot all about calories and ate just like we were kids again.

For the shortest business meeting on record, president Mr. John Fitch had the minutes of the last meeting read and then announced the following officers had been elected for the coming year: President, Mr. John Fitch, Vice-President, Dr. Mattox, Secretary Miss Florence Thurlow, Treasurer, Mrs. Brooks.

All present received a copy of the December Minutes.

It was reported that the paper on the family mytilidae by Tron Soot-Ryen, and on the family arcidae by Helen Rost are now available.

A newspaper article credited our own John Fitch as identifying a " Sea Serpent" washed ashore at Venice , for what it really was, a basking shark. This set off such a contest of wierd " sea monster" stories that the meeting soon reverted to the happy-go-lucky way it had started and fun and good talking prevailed for the rest of the evening. Florence Thurlow, Secretary

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SOME ASPECTS OF DISTRIBUTION IN MARINE MOLLUSCS
(Abstract)
By William K. Emerson

West coast students of conchology are fortunate in having considerable information on the distribution of the Eastern Pacific shallow water molluscs. Numerous faunal lists have been compiled for local areas. These data, together with the records of material contained in museums and private collections, provide the basis for the faunal check lists of Dall (1921), Keen (1937) and Burch et al (1945-1946). The recorded ranges are constantly being revised as new information becomes available.

The common procedure for the conchologist when attempting to determine the geographic range of extant species is to record the end points of range in terms of latitude and longitude. As a result a number of inherent problems are encountered. The following factors can falsely extend ranges and should be considered when evaluating the available data: 1. sterile or nonreproductive distribution, 2. unnatural transport, 3. misidentifications, 4. confusion with fossil material, and 5. unreliable locality records.

The serious amateur can increase our knowledge of the distribution of the molluscs by making careful collections in local areas and recording his findings in appropriate journals.

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Babelomurex Coen.

Last summer I enjoyed a visit with Dr. Leo G. Hertlein at the California Academy of Sciences, San Francisco, and mentioned the obvious fact that the local species now assigned to *Coraliophilla* were certainly not that and another name should be used for them. Dr. Hertlein showed a figure of *Babelomurex* to me and we found it very interesting indeed. Any further advice on this matter will be appreciated. The following note from Dr. Hertlein is clear:
" By the way, I have checked again on *Babelomurex* Coen . The type cited is *Pseudomurex* (*Babelomurex*) *babelis* Req. (= *cariniferus* Sow.) Whether or not Sowerby's species is identical, I do not know but the species originally described as *Fusus babelis* Requien is certainly very similar to the shells you mentioned, such as " *Corallio-phila*" *hindsii* and *oldroydii*."

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PUBLICATIONS

Marine Mollusks Collected During the " Askoy" Expedition to Panama, Colombia, and Ecuador in 1941. By Leo George Hertlein and A.M. Strong. Bulletin of the American Museum of Natural History, Vol. 107, Art. 2, New York 1955. pp 159-318, plates 1-3.

This work will be in great demand by all interested in the fauna of the Panamic province. The work is beautifully done including extensive synonymy of the species. The generic assignments are of unusual interest. A few comments on some of them will follow.

Megapitaria Grant and Gale is used for the species squalida Sowerby Pitar Romer s.s. for consanguineus C.B. Adams, fluctuatus Sowerby, tomeanus Dall and subgenus Pitarella Palmer for catharius Dall. This arrangement is mentioned and suggested because these species are now found in the current literature under an assortment of generic allocations.

The generic arrangement of the species of Turridae is of interest. Many of us have been continuing to use nomenclature for this group knowing it to be faulty but waiting for the long promised revision.

Genus Hanetia Jousseaume is used for the species pallida Brod. and Sowerby and an excellent discussion of this rather controversial name is included. The placing of Hanetia pallida anomala Reeve may be a move well taken assuming that the authors have a much more extensive series of specimens than are available to most museums. It has been my personal opinion that anomala is separable as a distinct species.

Hexaplex Perry is given as a subgenus of Murex and the type here designated as Hexaplex foliacea Perry. Hexaplex is resurected from the dead here for the sole purpose of containing one species, Murex (Hexaplex) princeps Broderip by the authors. By so doing they divide the group listed under Muricanthus or in most recent literature in error to my view Phyllonotus. It seems to me that the relationship between the species princeps and nigritus, radix, erythrostoma,brassica etc. is too obvious for question and the only possible reason apparent for taking one species out of this group seems to be for the purpose of doing something about the name Hexaplex. Hexaplex was vaguely described by Perry in 1811 and Perry's own contemporaries refused to accept his genera. Sowerby stated in the Zoological Journal as early as 1825 that Perry's genera were too poorly defined for serious consideration. And it happens that the only possible member of this group of Pacific coast Muricidae that could be assigned to such a name is the species princeps with its six varices. I am more than happy to accept Dr. Hertlein's view on almost any point in conchology but I trust that he will pardon me if I disagree in this matter.

Genus Thais Bolten, Subgenus Vasula Morch. The authors here designate as type of Vasula the species Purpura (Vasula) melones Duclos. This places the species crassa Blainville,1832 in the synonymy. The species crassa has been assigned to the subgenus Mancinella. The authors seem to have made an excellent case for this move. The species melones is said to be dated March,1832 and crassa in May,1832.

Another item that may cause some extensive changing of labels is Turritella leucostoma Valenciennes 1832. It is safe to assume that most collections list this rather common though showy species as Turritella tigrina Kiener,1843-44 with perhaps some using T. cumingii Reeve.

Archetectonica nobilis Bolton,1798 has obvious priority over the commonly used name granulatum Lamarck,1822.

*** An interesting book- available from John Q. Burch $2.00

Essays in the Natural Sciences in Honor of Captain Allan Hancock on the occasion of his birthday, July 26,1955- University of Southern California Press- Allan Hancock Foundation

This excellent volume of 345 pages contains 26 different papers and among them several that pertain to mollusks. Among them:

New Light on the Biology of *Spirula*, a Mesopelagic Cephalopod by Anton Fr. Bruun- The Galathea Expedition 1950-52 ,Copenhagen

Observations on the Brachiopod Communities Near Santa Catalina Island by N.T. Mattox.

In this paper Dr. Mattox has made an interesting stúdy of the Brachiopoda of southern California including detailed lists of the other animals found living near or with them. Well illustrated with three full page plates.

Marine Mollusks Collected at the Galapagos Islands During the Voyage of the Valero III,1931-32 by Leo George Hertlein and A.M. Strong. In this paper the authors not only give a detailed check 1 list of the species involved but a review of the earlier literature. The list of references to literature cited should be carefully checked by any student working with this fauna. One clear plate illustrating 19 species.

Seasonal Infections of the Snail, *Cerithidea californica* Haldeman, with Larval Trematodes by W.E. Martin.

*** This work may be had from John Q. Burch $5.00

Los Angeles Times of Dec. 4,1955 carried quite a feature article entitled " Japan Pearl Fleet Uses Teamwork" Orientals outdo Australians with haul of the year. " It is interesting to note that the Australian government allow the Japanese pearlers a large quota of 1000 tons. This year the Japanese catch was wroth $896,000. From the many tons of shells taken comparatively few pearls are seen, but the real value is, of course, the shells, the MOP, Mother of Pearl which now has rather a surprising value . In fact, it might interest a shell collector who owns a pair of the large heavy shells to know that his specimens may well be worth several dollars as bulk manufacturing shell.

The Australian Newsletter for Oct.,1955 lists the Tasmanian scallop season- it was estimated at 470 tons worth to the fishermen £ 145,000.00 - Australian pound is worth $2.25.

The Functional Morphology of the Rock-Boring Lamellibranch *Petricola pholadiformis* Lamarck by R.D. Purchon Journal Marine Biology U.K. v 34 no.2,1955. This is a very thorough and well illustrated paper on a species now living on both coasts of the United States.

The Feeding Behavior of Starfish on Essex Oyster Beds by D.A. Hancock J. Mar. Biol. U.K.,1955. While there has been a great deal written on this subject, the paper at hand is extremely interesting, the author observing the prey and habits of numerous species, and the manner of attack.

Some Phases of the Biology of *Ostrea equestris* Say and a Comparison with *Crassostrea virginica* (Gmelin) by R. Winston Menzel Publications of the Institute of Marine Science,Port Aransas,Tex.

A Study of the Oyster Biology and Hydrography at Crystal River, Florida by C.E. Dawson as above Sept.,1955

The Mollusc Fauna of Pulau Panaitan (Prinseneiland) Land and Fresh-water Molluscs by L.J.M. Butot (Museum Zoologicum Bogoriense,Bogor) From: Treubia Vol. 23, Part 1, Sept. 15,1955, pp. 69-135.
This is a very interesting account of an expedition to a little known island of the East Indies. The numerous text figures are clear and apparently reproductions of drawings. They are clearer than the several photographic plates. Comparisons of closely related species are well done. Mention is made of some of the marine fauna but not treated systematically.

Fauna of Akkeshi Bay XXI Pelecypoda and Scaphopoda By Tadashige Habe- Publications of the Akkeshi Marine Biological Station No. 4, Feb. 1955 - In English - text 31 pages plus 7 plates & Desc.
This collection was made from the southeast coast of Hokkaido and is of unusual interest to students of the fauna of the Pacific coast of North America because of the rather large number of species reported here that are also known from this coast. Among these may be mentioned Ennucula tenuis (Montagu),Nuculana pernula (Muller), Musculus Laevigatus (Gray), Polynemamussium alaskense (Dall), Monia macroschisma (Deshayes), Turtonia minuta (Fabricius), Clinocardium nuttalli (Conrad), Clinocardium californiense (Desh.), Spisula (Mactromeris) voyi (Gabb), Macoma incongrua (v. Martens), Siliqua alta (Brod. & Sby.),Panomya ampla Dall,Mya truncata L., Bankia setacea (Tryon), ...
The nomenclature on some of the species is not that of the more orthodox or older works, but I have no doubt that Dr. Habe is correct and has good reasons for such changes.
Copies of this paper may be had from John Q. Burch is wished $2.00

Notes on *Potamocorbula* (gen. nov.) *amurensis* (Schrenck) by Tadashige Habe - Reprint from Zoological Magazine, vol.64, No.9, Sept. 15,1955. This paper will be of interest to those concerned with the family Corbulidae.

Notes on the Systematic Position of the Genus *Orectospira* Dall,1925
The type species of the above genus is *Basilissa bebelica* Dall and has been classified by the shell characters in the Trochidae. The author here transfers it to the Turritellidae based on radular characters.

Molluscs of the surroundings of Kazimierz on the Wisla by Adolf Riedel- Fragmenta Faunistica, Warsaw- This work is entirely in the Polish language other than a page summary in English. The land fauna including the slugs is discussed.

Male copulatory organs deficiency in the *Stylommatophora* with a special reference to *Retinella nitens* (Mich) by Adolf Riedel

Oliva peruviana Lank.1810 Algunas Relaciones Dimensionales y observa-ciones Sobre Su Diseno Cromatico by Prof. Francisco Riveros-Zuniga. Revista de Biologia Marina, Valparaiso, Chile, 1951.
While not exactly a recent publication this paper seems to be of interest dealing with the variations of this very variable species. 12 pages and 13 ill.
And in the same publication - Un Caso De Espira Turriculada En Acanthina calcar Martyn. by the same author. A description and figure of a pathological specimen with a normal specimen. Such forms are too frequently described as species or subspecies.

NOTES ON AN ECOLOGICAL STUDY

By Robert Talmadge

While working on a project covering the distribution and speciation of molluscs in the marine genus Haliotis , some interesting factors came to light that may be of assistance to other malacologists. Utilizing marine topographical maps of the far western Pacific Ocean and the adjacent land areas, it was noted that a more or less continuous shallow ridge extended southward from the Peninsula of Kamchatkana to Australia. The geology of this area (islands) is varied; coral islands and reefs, volcanic cones, and sedimentary uplifts are all noted. A complete study of the situation in relation to the molluscs is a major project for some future malacologist, but portions of the area are the basis for these notes.

A shallow water peninsula extends southward from Formosa into the Philippine Islands, thus forming more or less of a spear head in the northern portion of the area studied. The Pacific Ocean to the east and the northern portion of the South China sea to the west is relatively deep, but the islands form a protective barrier for a number of shallow channels and seas. In the southern Philippines the islands tend to break into a three pronged island group, containing the Sulu and Celebes Seas. These seas have relatively deep central basis but are surrounded by shoals. The only major outlet is the Makassar Straits which end abruptly against the Lesser Sunda Islands in the Banda Sea. Another arm of the Pacific enters this general region in the form of the Molucca Sea, but is broken up by a series pf small islands to form the shallow Ceram Sea against the swampy coast of Northwestern New Guinea.

The South China Sea rapidly shoals in the south with an average depth of twenty five fathoms. This shallow mass changes into what is called the Java Sea as the Indonesian Islands are reached.

The deeper Indian Ocean to the west shallows between the Lesser Sunda Islands and the north coast of Australia to form the intermediate Timor Sea and finally the extremely shallow Arafura Sea located in the triangle between north Australia , New Guinea and the Lesser Sunda Islands.

A number of conditions exist in this region that create an ecologic situation that exists in few areas. From north to south the majority of the area under study covered only a few degrees each way from the equator. The majority of the seas are shallow, which in this geographical position would be very warm. There are no major sea currents passing through this area, each current breaking up into diverse subcurrents as islands bar their directional flow. Without a major current the waters pass and repass the same area, maintaining a close to constant temperature. Localized currents are often rapid and treacherous.

Much of the shoreline on the major islands is mud and swamp, a habitat that the rock or coral inhabiting Haliotis avoid. Population series examined and pin pointed on maps of the area show some interesting data. The shallow, warm water living, specimens are smaller and more highly colored than the same species inhabiting the cooler waters to the north and south. In the past a number of these have been given specific names, that the writer now suspects are merely color forms or ecologic phases. This is further highlighted by finding intermediate specimens at the junction of the cooler open waters and this series of shallow basins. Thus with intermittent distribution, varied coloration, small size, and intermediate specimens projecting both inward and outward from this region

work on a single species can result in considerable confusion. It is hoped that other conchologists will examine their series of varied genera and note if this condition is exhibited in other genera as well as *Haliotis*.

Species examined:

Haliotis (Haliotis) asinina L.
" (Sanhaliotis) varia L.
" " planata Sowerby
" " squamata Reeve
" (Euhaliotis) ruber Leach
" (Padollus) ovina Chem.

****

The Los Angeles Times for Dec. 25 carried a large article of two colums and three large photographs entitled " Poison Fish Studies May Save Lives". by Dewey Linze. The article is, of course, about the excellent work being done by Dr. Bruce Halstead of the College of Medical Evangelists at Loma Linda. However, one of the four plates showed a diver bringing up a large specimen of *Tridacna* and the work being done by Dr. Halstead and his associated naturally involves shellfish as well as all other animals that might be concerned with the toxic poisons involved. During World War II the Japanese lost a vast number of men to fish poisons because it was the policy oft the Japanese to live off of the land when possible. The troops of the United States depending largely upon their own supplies for food were affected comparatively little.

Dr. Carlos J. Risso Dominguez, Azcuenaga 1872, Burnos Aires, Argentina wishes to correspond and exchange with those whose interest may be in the nudibranchs. He states that he will be pleased to supply formulas, chemicals or even the stock solutions to prepare them, as well as the fixing chemicals etc. Inasmuch as there are comparatively few workers in this field it is hoped that this may help them get together.

In looking over the interesting New York Shell Club Notes I note a discussion and figure of an *Ancilla* in Mr. D'Attilio's paper. This reminds me that in my shop we mixed specimens of *Ancilla tankervillei* Swainson with some of those of *A. glabrata* L. So if you purchased a specimen of this lot from us we suggest that you write us for a brief explanation of the specific distinctions which are very clear. Otherwise your shell may be incorrectly labelled.

Mr. H.W. Miller of Cuba called attention to the fact that I listed the species *Terebra pedroana philippiana* Dall,1920 in the key and as a matter of fact misspelled the name. Furthermore it should be mentioned that this subspecies is in my opinion and that of most others of very doubtful validity. It is supposed to be dis-tinguishable from the typical by its less distinctly developed axial ribs. However, we all have sets of them in which we can challange anyone to separate the variety from the typical. I have my own all labelled simply *Terebra pedroana* Dall,1908, and this name is in itself questionable.

Family Columbellidae (Con.)

Genus Aesopus Gould,1860 Type (by monotypy), Aesopus japonicus Gld.

Key to Species of Aesopus

All sculpture obsolete
. Greenish-waxen, with chestnut flamules
12 x 3.3 mm. Monterey ..... goforthi
Oldroyd , vol.2, part 1, p.280
. Faintly flamed and tinged with orange, apex pink
10 mm. Gulf of Calif. ..... babbi
Axial ribs present
. Spiral sculpture absent
.. Axial ribs numerous, faint
Yellowish, whitish or ocellated with pale brown
7 x 2 mm. Magdalena Bay to Guadalupe Island .. arestus
Proc. USNM, vol. 56, p. 332
.. Axial ribs distinct, about 20 in number
White, with brown maculations o
7.5 x 2.75 mm. San Diego to Panama... eurythideus
Oldroyd, vol.2, part 1, p. 278
.. Axial ribs about 16
7.4 x 2 mm San Juan del Sur.... fredbakeri
Proc. Acad. Nat Sci Phil vol.84,p.14
. Spiral sculpture of fine striae, axial ribs nodulous
White, with a brown zone below the periphery
7.5 x 2.2 mm. Acapulco ..... xenicus
Axial sculpture absent
. Entire surface with minute, even, spiral striations
.. Light pinkish brown
4.3 x 16 mm. San Pedro to Cape San Lucas,, sanctus
Oldroyd, vol.2, pabt 1, p. 279
.. White with longitudinal brown streaks
8 mm. Peru.... oblita
Tryon, vol.5, p. 123
. Entire surface with strong spiral grooves
.. White or yellowish, sometimes brown tinted
9.25 x 3.5 mm. San Pedro to San Diego,,, chrysalloideus
Oldroyd, vol.2, part 1, p. 279
.. Whitish, tinged or spotted with brown
4 mm. San Pedro to Pt. Abrejos .... myrmecoon
Oldroyd, vol.2, part 1, page 279

Aesopus osborni Hertlein and Strong near Port Guatulco,Mex.
Not in the key Zoologica 36:5
" chrysalloideus (Carpenter,1864 San Pedro to San Diego
" sanctus Dall,1919 San Pedro to Cape San Lucas
" myrmecoon Dall,1916 San Pedro to Pt. Abrejos
" eurytoideus (Carpenter,1864 San Diego to Panama
" goforthi Dall,1912 Monterey
" arestus Dall Magdalena Bay
" babbi Tryon Gulf of California
" xenicus Pilsbry and Lowe,1932 Gulf of California
" oblita Reeve Peru
" fredbakeri Pils. and Lowe,1932 San Juan del Sur

Genus Anachis H. and A. Adams,1853 Specied omitted from list and key in Minutes 153, pp 6-9

Anachis coronata hannana Hertlein and Strong Zoologica, 36:5
" ritteri Hertlein and Strong W. Mexico "
" teevani " " "
" rohderi " " "

Genus Amphissa H. and A. Adams, 1853 Type (designated by Dall, 1913), Buccinum corrugatum Reeve, not Buccinum corrugatum Brocchi, 1814 = Amphissa columbiana Dall.

Key to species of Amphissa

Axial ribs about 20
Spiral sculpture of fine lines
20 x 8 mm. Alaska to San Pedro .... columbiana
Axial ribs about 17
Spiral sculpture of fine regular cords
Alaska to San Diego .... reticulata
Axial ribs 14 to 16
Spiral sculpture of narrow ridges separates by wide interspaces
12 x 6.5 mm. Oregon to Cedros Island.... versicolor
Axial ribs 11 to 13
Spiral sculpture of flattened, strap like cords
14 x 8 mm. Farallones to San Diego .... bicolor
Axial ribs about 9
Spiral sculpture of distinct, acute cords
11 x 5 mm. Monterey to Coronado Islands... undata

Amphissa lyrta B. H. & S. Gulf of California- not in key

Amphissa sp. Hertlein,1955 off Cape Pasado, Ecuador
Bull. Am. Mus. Nat. Hist. vol. 107: Art. 2, p. 250

Amphissa columbiana Dall,1916 Chiachi Ids.,Alaska to San Pedro,Calif.
" versicolor Dall,1871 Oregon Coast to Cerros Island,L.C.
" " incisa Dall,1916 Monterey to Todos Santos Bay
" cymata Dall,1916 Monterey to Dana Pt.,Orange Co., Calif.
" reticulata Dall,1916 Port Althorp,Alaska to San Diego
" undata (Carpenter),1864 Monterey to Cerros Id., L.C.
" bicolor Dall,1892 Farallones to San Diego,Calif.

Genus Strombina Morch,1852

Key to species of Strombina

Outer lip sinated in the middle
    Cape San Lucas..... sinuata
    Tryon, vol.6 5, p. 152
Outer lip sinated at the posterior end of the aperture
. Sinus deep and rounded Gulf of Calif. ... clavulus
    Reeve, Pleurotoma, pl.12, sp.106
. Body with a tooth notching the aperture at the sinus
    16 mm. Acapulco to ... hirondo
    Reeve, sp. 219, Columbella
Outer lip only slightly sinated or not at all
. Axial sculpture absent
.. Spiral sculpture confined to the base and canal
... Body whorl with prominent humps
.... A hump on the back, outer lip thickened externally
    28 mm. Gulf of Calif. to Panama.... dorsata
    Tryon, vol.5, p. 185
.... White humps on back and sides
    16 mm. Lower Calif. to Peru ..... gibberula
    Tryon, vol.5, p. 184
... Body whorl with the humps small or wanting
.... Shoulder of the body whorl with a row of tubercules
    25 mm. Gulf of Calif. to Central America.. maculosa
    Tryon, vol.5, p. 186
.... Body whorl corronated at the suture with 9 pustules
    37 x 10.8 mm. Cerros Id. to Gulf of Calif. paceana
    Nautilus, vol.30, p.28
... Body whorl without tubercules or pustules
.... Aperture whitish,not dentate
    25 x 13 mm. Central America to Ecuador.... turrita
    Tryon, vol.5, p. 186
.... Lip callously thickened, dentate within
    22 x 11 mm. Gulf of Calif. to Panama... pavonia
    Tryon vol. 5, p. 185
.. Spiral sculpture not confined to base and canal
... Spiral lines on later whorls only
    15 x 7 mm. Gulf of Calif. to Ecuador... solidula
    ~~15 x 7 mm. Gulf of Calif. to Ecuador...~~
    Tryon, vol. 5, p. 147
... Shoulder defined by a carina, spirals strong
    37 x 15 mm. Gulf of Calif. .... colpoica
    Nautilus, vol.30, p.28 equals subulata Sby. not Reeve
. Axial sculpture present
.. Spiral sculpture confined to the base and canal
... Axial sculpture on the first few whorls only
.... Canal long, body whorl with a hump
    40 x 14 mm. Central America ... fusinoidea
    equals fusiformis Hinds, vol. Sulphur pl.10,f.17 not Reeve
.... Canal shorter, body whorl without a hump
    34 x 13.5 mm. Gulf of Calif. to Panama... edentula
    Bull. Mus. Comp. Zool., vol.43, p. 310
... Axial sculpture distinct on all whorls
.... Axial ribs 10, canal long
    32.2 x 11.7 mm. Gulf of Calif. to W. Mex.... subangulata
    Trans. San Diego Soc., N.H., vol.8, p.21

.... Axial ribs 14, canal short
32 mm. Panama..... angularis
Tryon, vol.5, p. 186
.... Axial ribs 18, canal short
19 x 7.5 mm. Cape San Lucas .... bonita
.... Periphery of last whorl rounded
..... Shell short and broad
30 mm. Central America to Ecuador... recurva
Tryon, vol.5, p. 187
..... Shell slender, turrited
...... Axial ribs regular, rather close
37.5 mm. Central America.... elegans
Tryon, vol.5, p. 186
...... Panama to Peru.... lanceolata
Reeve, pl.1, fig.3
.. Spiral sculpture not confined to the base and canal
... Axial sculpture of blunt riblets on the last whorl only
14 x 7 mm. Gulf of California to Ecuador... solidula
Tryon, vol.5, p. 147
... Axial riblets extending over several whorld
.... Spiral sculpture of strongp chanelled grooves
25 mm. Gulf of Calif..... lilacina
Nautilus vol.30, p.28; Proc. USNM, vol.66, pl.35, f.5
.... Spiral sculpture of cords or raised threads
..... Spire short, sharp pointed
23 mm. Gulf of Calif. to Central America... pulcherrima
Reeve, pl.3, fig.10
..... Spire long, turrited
30 x 11 mm. Gulf of Calif.... carmencita
Trans. San Diego Soc. N.H. vol.8, p.21

List of species of Strombina
Strombina marksi Hertlein & Strong Arena Bank, Gulf of Calif.
Not in key Zoologica 36:5
" gibberula (Sowerby),1832 Lower Calif. to Peru
" maculosa (Sowerby),1832 " to Panama
" paceana Dall,1916 Cerros Island to Gulf of Calif.
" solidula (Reeve) Magdalena Bay to Ecuador
" lilacina Dall,1916 Gulf of California
" colpoica Dall,1916 "
" edentula Dall,1908 "
" dorsata (Sowerby),1832 "
" clavulus (Sowerby),1832 "
" carmencita Lowe,1935 "
" subangulata Lowe,1935 "
" bonita Strong and Hertlein Cape San Lucas
" pulcherrima (Sowerby),1832 Tres Marias to Cent. Amer.
" turrita (Sowerby),1832 Acapulco to Ecuador
" hirondo (Gaskoin) Acapulco
" recurva (Sowerby),1832 Acapulco to Ecuador
" sinuata (Sowerby),1874 Acapulco
" fusinoides Dall Acapulco to Central America
" elegans (Sowerby),1832 Central America
" lanceolata (Sowerby),1832 Panama to Peru
" pavonia (Hinds) Panama
" angularis (Sowerby),1832 Panama

Genus *Strombinoturris* Hertlein and Strong Zoologica 36:5 p 84
Type (by original designation), *Strombinoturris crockeri* Hertlein and Strong.

Strombinoturris crockeri Hertlein and Strong Gulf of Calif.
to Central America

Genus *Cosmioconcha* Dall,1913

Key to species of *Cosmioconcha*
Axial sculpture absent
. Spiral sculpture of 6 or 7 cords on the base
19 x 9 mm. Gulf of Calif. .... *palmeri*
Proc. USNM vol.66, pl.21, fig.8; Proc. USNM v.45. p.589
. Spiral sculpture of about 20 grooves on the base
.. Whitish, with brown flames
24 x 7 mm. Gulf of Calif. .... *pergracilis*
Proc. USNM, vol.45, p.590; Proc. USNM, vol.64, pl.21, fig.9
.. Uniformly pale olivaceous
16 x 5 mm. Gulf of Calif...... *parvula*
Proc. USNM, vol.45, p.590; Proc. USNM, vol.66, pl.21,fig.9
. Spiral sculpture ?
.. Whitish or yellowish, stained with chestnut
24 x 10 mm. Central America to Panama.... *modesta*
Tryon, vol.4, p.10
.. Nearly black, white spots on the periphery
18 x mm Peru and Chile .... *buccinoides*
Tryon, vol.5, p.127

List of Species of *Cosmioconcha*
Cosmioconcha palmeri Dall,1913 Gulf of California
" *pergracilis* Dall,1913 "
" *parvula* Dall,1913 "
" *modesta* (Powys),1835 Panama to Ecuador
" *buccinoides* (Sowerby),1832 Peru

MINUTES OF THE CONCHOLOGICAL CLUB, JANUARY 3, 1956

The regular meeting of the Conchological Club of Southern California was called to order by President, Mr. John Fitch at 7:30 P.M. the evening of January 3rd., 1956.

The minutes were approved as read.

The Treasurer reported a total cash on hand from Dues, stationery, etc. to be $69.17. Disbursements of $37.62 left a balance of $31.55. We now have 78 members. Of this number, 29 members and 6 guests make an average attendance at the meetings of 36. We are looking forward to a year of programs with information so interesting and vital to Conchologists that we will bring our membership up to 100. Dues are now payable for 1956 with a "special bargain" tonight, 2 for $1.00.

We were happy to have the following guests introduced by our Hostess, Mrs. Rose Burch: Mrs. John Fitch, Mr. Milton Zim, President of the Pacific Shell Club, and Mrs. Zim. Dr. Parkhurst of the Long Beach Shell Club, and Mrs. Jean Wilkins, President of that organization. Mrs. Wilkins took this opportunity to invite anyone who might be interested, to attend the regular meeting of the Long Beach Shell Club Sunday, January 8. The meeting will be held as usual in the Y.M.C.A. There will be a fine program of colored slides taken by Mr. Don Ryan, showing "Tide Pool Animals".

The President made the following announcements:

First, a few copies of the booklet "Common Marine Bivalves", written by John Fitch and published by the Fish and Game Dept., are now available for those who may wish them.

Next, "The World Wide Directory of Shell Collectors", put out by Mr. John Q. Burch, is about to go to print. If your are interested in having your name appear in this book, please fill out the forms available here tonight, with the information necessary for the publication.

We were reminded that our next Field Trip will be at the Carpinteria Reef, Saturday, January 28. There will be a 1.3 Tide at 4 P.M. However, those wishing to come earlier to take advantage of the preceding ebb tide, may also enjoy eating their lunch in the State Park adjacent to the collecting area. Come early..stay late!

The discussion digressed slightly at this point as to the avisability of taking shells locally in view of the contamination of the water. But it was agreed that it is still possible to get to the Beach at White's Point and northward for good collecting.

Concerning the census taken recently in the Pismo Clam beds, Mr. Fitch made it clear that while the clams do appear to be getting smaller and fewer, State Laws protect a rotating 8 mile stretch of beach in San Luis Obispo County at all times against predators, both human and non-human.

Our usual break in the meeting at this point gave everyone a chance to examine more closely the many fine representative collections, and to cross examine the lucky members who went on the Thanksgiving field trip to Punta Penasco, Mexico.

The program for the evening was a very thorough report by Mr. Emery Chace on the new book "A Report on the Family Mytilidae(Pelecypoda) by Tron Soot-Ryen; Allan Hancock Pacific Exped., Vol. 20, #1, 175 pages, 10 plates & 78 text figures.

The meeting closed with the announcement by Mr. John Q. Burch that the following publication is now available: Marine Mollusks Coll. During the Askoy Exped. to Panama, Colombia & Ecuador in 1941. by Leo G. Hertlein & A.M. Strong. Bulletins of the American Museum of Natural History Vol. 107 Article 2, New York, 1955.

The meeting was then adjourned so that members of the A.M.U.P.D. could go over some of the details pertaining to the forthcoming meeting this summer in San Diego.

Respectfully Submitted,

Miss Florence E. Thurlow, Secretary

MINUTES 155

FEB. 1956

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif.

All interested persons are cordially invited.

Please mail all news to your editor- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710,
Home Ax 2-7965

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Constructive criticism is always welcome and this editor wishes to thank L.J.M. Butot, Museum Zoologicum Bogoriense,Bogor,Java, Indonesia for the following communication. However, it was not the intention to challenge the great contribution to conchology made by Perry, but only to question certain generic names as being too vaguely defined.

" With regard to Perry's names I must draw your attention to an article by Hedley 1902 in Proc. Linnean Soc. N.S.W., Studies on Australian Mollusca, part 6, pp. 24-28. It is known that Sowerby and Reeve were not disposed to acknowledge any work which upset their species. These two should have prevented our present troubles by giving due credit to Perry. Gray,1829 was honest enough to do so, and many names created by Perry have been accepted.

I, however, agree that it is not pleasant to change names every time and therefore we must accept his names, otherwise we will have to change again all the Perry names now in use. Anyway, there is a commission for Zoological Nomenclature and Perry's work is not on the list of rejected works, and cannot be placed there. The only way to convince the Commission is in every separate case to show the reasons why a special Perry name which takes precedence

should be supressed. I think the Commission will not do so, as many names have been long accepted.

In this connection I should like to refer to an article by Mr. John Q. Burch in his Minutes 72, August,1947, p.22. " Sowerby and Reeve are conchological aristocrats". And there are still aristocrats in our field of study. They, however, shall not rule by Imperial Edict unless that aristocrat acts as the qualified comm--ission.

So, bring Perry before the court and await the sentence. Is not there an opinion according to which we have to accept the current name if there has not been a proposal to change it since 50 or 100 years ?

Have you any opinion regarding the validity of names published by Martyn (Universal Conchologist) ? In my opinion this is a work which should be placed on the list of rejected works as the a author is not binomial."

******

My opinion re Martyn is that his work seems to me to be in part binomial. Whether it is possible to accept that part and reject the other is another problem. However, there is another matter to consider with the Universal Conchologist. In my role as dealer in antiquarian books I have seen five copies of this work pass through my hands and no two of them were exactly alike. Martyn made his books by special order and obviously to fit the purse of the buyer. It would seem that any valid publication should be uniform.

****

Ocenebra minor (Dall),1919

In my paper " A Systematic Outline of the Muricacea in the Eastern Pacific" read at the Stanford meeting of the AMUPD and published in Minutes 149, p.9, I listed the above species as a subspecies of Ocenebra interfossa (Carpenter).

Mrs. Mary Bormann in her paper published in Nautilus Vol.60, p.41 in " A Survey of Some West American Ocenebras..." made an excellent case for considering this a species distinct from the interfossa group. The paper in the Nautilus is very clear and well illustrated with four figures of Ocenebra minor (Dall). I am pleased to change my assignment of the species.

****

Publications Received

Records of the Indian Museum-
On some deep-sea molluscs from the Indian Ocean with descriptions of three new species (Bivalvia) by H.C. Ray June,1951
* Interesting species from several hundred fathoms.
On some lamellibranchs from Mauritius, with description of one new species of the genus Montacuta (Mollusca). by H.C. Ray 1952
A New species of the genus Melania from the Coromandel Coast of India (Mollusca, Gastropoda: family Melaniidae) by H.C. Ray,1953.

Bemerkenswerte Landschnecken in Mecklenburg von H.A. Schmidt Archiv. der Freunde der Nat. in Mecklenburg". Bd.1,1955.
Die Besiedlung einer Kulturflache durch Landschnecken von H.A. Schmidt-- 1955

Die okologischen Beziehungen zwischen unseren Landlungenschnecken und den Wurmern, Von Ewald Fromming, Berlin. Zool. Anzeiger,1955

Family Fissurellidae

Shell with a marginal sinus at the end of the rib ... *Hemitoma*
Shell with a small perforation midway on the end.... *Rimula*
Shell with an apical perforation or orifice
. Perforation bounded internally with a raised edge..*Puncturella*
. Perforation bounded by a smooth callus ridge
.. Perforation large, ¼ to 1/3 the length of the shell
(Animal larger than the shell)
... Adult shell large, 75 to 100 mm. in length... *Megathura*
... Adult shell small, less than 25mm in length
.... Sculptured with unequal, scaly radial ribs... *Lucapinella*
.... Radial ribs equal, nearly smooth... *Megatebennus*
.. Perforation small, less than ¼ the length of the shell
(Animal contained in the shell)
... Internal callus truncated posteriorly.... *Diodora*
... Internal callus not truncated.... *Fissurella*

Genus *Hemitoma* Swainson,1840 Type (by monotypy),*H. tricostata* (Sowerby)= Patella octoradiata Gmelin ?

Hemitoma bella (Gabb),1865 Forrester Island,Alaska south to Lower Calif.
" chiquita Hertlein & Strong,1951 Port Guatulco,Mex.

Genus *Rimula* Defrance,1827
Outer surface delicately cancellated
Length 3 mm. San Martin Island to Gulf of Calif... *mazatlanica*

Rimula mazatlanica Carpenter,1857

Genus Puncturella Lowe,1827 Type (by original designation) (fide Woodring), *Patella noachina* Linnaeus.

Key to species of *Puncturella*
With wide spaced radial ribs and close concentric threads
. Intercalary radial riblets present
.. Major radial ribs about 20
Diam. 15 mm. Alaska to La Paz..... *cucullata*
.. Major radial ribs about 30
Diam 27 mm Alaska to San Diego ... *multistriata*
. Intercalary radial riblets absent
Chile to Patagonia .... *falklandica*
Tryon vol.12, p.231, pl.63, fig.23
With many nearly equal radial threads
. Shell high, conic
.. Internal laminae supported by a transverse rib
Diam. 10 mm Alaska to San Pedro... *galeata*
.. Internal laminae without props.
Diam. 7.5 mm Alaska to San Pedro ... *cooperi*
. Shell subcylindrical, minutem radial threads strong
San Diego/// *carophylla*
. Shell low, expanded
Diam. 32 mm. Panama to Galapagos ... *expansa*
Bull. Mus. Comp. Zool. 43: 353, pl.4, figs. 5,10,11

Puncturella cucullata Gould,1846 Alaska to La Paz
" galeata Gould,1846 " to San Pedro
" cooperi Carpenter,1856 " "
" multistriata Dall,1914 " to Cortez Bank
" carophylla Dall,1914 San Diego
" (Cranopsis) expansa Dall,1896 Galapagos
" (Cemoria) falklandica (A. Adams),1862 Chile,Patagonia

Genus Megathura Pilsbry,1890 Type (by monotypy) Megathura californica Nuttall MS - Megathura crenulata (Sowerby)

Radial and concentric ridges fine, close, equal
Length 100 mm. Monterey to Cerros Id..... crenulata

Megathura crenulata (Sowerby),1825

Genus Lucapinella Pilsbry,1890 Type (by original designation), Clypidella callomarginata Carpenter.

Radial ribs imbricated by strong lines of growth
Length 20 mm. Bodega Bay to Peru.... Chile callomarginata
Surface decussated by radial and concentric ridges
Central America... aequalis
Tryon 12:197, pl.31, fig.24; Reeve, fig.55

Lucapinella callomarginata (Dall),1871 Bodega Bay to Chile
" aequalis (Sowerby),1834 Central America to Ecuador

Genus Megatebennus Pilsbry,1890 Type (by original designation) Fissurellidea bimaculata Dall.

Sculptured with rounded radial ribs
Length 20 mm. Forrester Island to Cape San Lucas .. bimaculatus
Sculptured with sharp radial grooves
Length 27.5 mm. Peru corkeri
Proc. U.S.N.M. 37:243, pl.24, fig.3-7.

Megatebennus bimaculatus(Dall),1871 Forrester Island to Tres Marias
" corkeri Dall,1909 Peru

Genus Diodora Gray,1821 Type (by monotypy), Patella apertura Montagu-Diodora graeca Linne)

Anterior and posterior slopes nearly straight
. Radial ribs unequal, concentric ridges forming scales
Length 45 mm. Alaska to Magdalena Bay ... aspera
. Radial ribs subequal,nodulous
Monterey to San Quentin Bay ... densiclathrata
Reeve. Pl. fig. 64
Posterior slope humped behind the perforation
. Radiating ribs and concentric ridges equally strong
.. Perforation sub-central
Santa Barbara to Ecuador ... inaequalis
.. Perforation at about 1.3 point
Length 10 mm. Gulf of Calif. to Panama... saturnalis
Ann. Mag. Nat. Hist. 13:475

(con.)

. Radiating ribs strong, concentric ridges delicate
Peru ... *asperior*
Reeve pl.5, fig.30; Tryon 12: 214, pl.30, fig.6
Anterior and posterior slopes nearly equally convex
. Surface between strong radial ribs finely cancellated
Length 10 mm. Gulf of Calif. to Peru ... *panamensis*
Reeve pl.12, fig.87; Tryon 12:216, pl.32, fig.35
. Surface decussated by unequal radial and concentric ridges
Length 20 mm. Peru ... *fontainiana*
Tryon 12:207, pl.62; figs. 28,29,30

Diodora *aspera* Eschscholtz Cooks Inlet to Lower Calif.
" *densiclathrata* Reeve,1850 Monterey to San Quentin Bay
" *murina* Dall,1885 Crescent City to Magdalena Bay
" *alta* (C.B. Adams),1852 Panama
" *panamensis* Sowerby Gulf of Calif. to Peru
" *fontainiana* (d'Orbigny),1841 Peru
" *asperior* (Dall),1909 Peru

Genus *Fissurella* Lamarck,1799. Type (by monotypy), *Fissurella* *nimbosa* Linnaeus,1758

Margin of shell crenulated
. Inner margin dark bordered
.. Outer surface with radial and concentric sculpture
Chile ... *philippiana*
.. Outer surface with delicate radial sculpture only
Length 20 mm. Mazatlan ... *nigricincta*
. Innerm margin not black bordered
.. Outer surface with major and minor radial ribs
... Major radial ribs few, prominent
.... Margin scalloped between 8 major ribs
Length 30 mm. Gulf of Calif. to Peru ... *rugosa*
.... Margin regularly ovate
Length 30 mm. Gulf of Calif. to Peru... *obscura*
... Major radial threads small, numerous
Length 55 mm. Gulf of Calif. to Peru... *virescens*
.. Outer surface with subequal radial riblets or striae
... Riblets subrugosem obsuurely nodulous
Panama ... *ostrina*
... Striae numerous, surface roughened with raised dots
Peru ... *asperella*
Margin of shell not crenulated,inside dark bordered
. Interior of shell deeply wrinkled
.. Outer surface with radial and concentric undulations
Length 85 mm. Panama to Peru ... *crassa*
. Interior of shell not deeply wrinkled
.. Outer surface with radial and concentric sculpture
... Shell conical, elevated
Length 82 mm. Ecuador to Chile... *picta*
... Shell more or less depressed
.... Radiating ribs nodose, with intermediate striae
Central America ... *crenifera*
.... Radiating ribs close, equal
Chile ... *obovalis*

.... Radiating grooves close set, concentric striae fine
Length 40 mm. Panama to Magellan Straits... *mexicana*

.... Sculpture fine, mor or less obsolete
Chile ... *fulvescens*

.. Outer surface with radiating ribs or striae only

... Shell conical, elevated

.... Ribs rude, here and there larger
Crescent City, Calif. to Panama... *volcano*

.... Every 3rd to 7th rib larger
Length 35 mm. Mazatlan to Peru... *peruviana*

.... Fine radiating striae, coarser near the margin
Length 90 mm. Chile ... *punctatissima*

.... Striae fine, nearly obsolete
Length 100 mm. Peru to Chile... *nigra*

... Shell more or less depressed

.... Shell oval or circular

..... Ribs distant, prickly,nodose
Ecuador ... *clypeus*

..... Ribs variable, uneven or nodulous
8 mm. Gulf of Calif. ... *alba*

..... Riblets strong,rough,subequal
Length 74 mm. Panama to Chile ... *costata*

.... Shell ovate to elliptical

..... Ribs rather weak, uneven or tuberculate
Length 100 mm. Peru to Chile ... *maxima*

..... Fine radial striae over entire surface
Length 68 mm. Chile ... *latimarginata*

.. Outer surface without radial sculpture

... Surface with evident lines of growth, shell conical
Shell 77 mm. Chile ... *limbata*

... Shell with fine concentric striae, shell depressed
Length 54 mm. Chile ... *pulchra*

... Surface with a spongy texture, shell elongated
Length 17.5 mm. Gulf of Calif.... *spongosa*

Not in above key-

Fissurella beebei Hertlein and Strong,1951 Zoologica
Gulf of California

Fissurella volcano Reeve,1849 Crescent City to Panama

" *obscura* Sowerby,1834 Lower Calif. to Peru

" *virescens* Sowerby,1835 Gulf of Calif. to Peru

" *rugosa* Sowerby,1835 Gulf of Calif. to Panama

" *nigrocincta* Carpenter,1855 Mazatlan

" *alba* Carpenter,1857 "

" *spongiosa* Carpenter,1857 "

" *peruviana* Lamarck,1822 Gulf of Calif. to Peru

" *mexicana* Sowerby Mexico to Magellan Straits

" *crassa* Lamarck,1822 Panama to Peru

" *nigra* Lesson,1830 Peru to Magellan Straits

" *philippiana* Reeve,1849 Chile

" *ostrina* Reeve,1849 Panama

" *crenifera* Sowerby,1834 Central America

" *latimarginata* Sowerby,1834 Peru and Chile

" *picta* Gmelin,1791 Ecuador and Chile

" *clypeus* Sowerby,1834 Ecuador

" *maxima* Sowerby,1834 Peru and Chile

(con.)

Fissurella asperella Sowerby,1835 Peru
" costata Lesson,1830 Peru and Chile
" fulvescens Sowerby,1834 Chile
" limbata Sowerby,1834 Chile
" obovalis Lesson,1830 Chile
" pulchra Sowerby,1834 Chile
" punctatissima Pilsbry,1890 Chile
" concinna Philippi Peru
-"--

An excellent paper on this family appeared in the Revista Biologia Marina de Chile,1951. It is Catalogo Descriptivo De Fisurelidos Chilenos by Prof. Francisco Riveros Zuniga. This rather exhaustive paper covers sixty pages and is illustrated with 40 figures. The species differ materially from the arrangement given above and must be carefully considered in connection with the data listed above. The species listed by Prof. Zuniga follow in his arrangement.

Family Fissurellidae Risso,1826
Sub Family Fissurellinae
Genus Fissurella
Fissurella crassa Lamarck,1822
" picta Lamarck,1822
" darwini Reeve,1845
" alba Philippi,1845
" dozei Rochebrune et Mabille,1885
" maxima Sowerby,1834
" " concinna Philippi,
" philippiana Reeve,1849
" lata Sowerby,1834
" costata Lesson,1830
" radiosa Lesson,1830
" exquisita Reeve,1845
" stellata Reeve,1850
" limbata Sowerby,1834
" nigra Lesson,1830
" punctatissima Pilsbry,1890
" bella Reeve,1849
" pulchra Sowerby,1834
" bridgesii Reeve,1849
" fulvescens Sowerby,1834
" flavida Philippi,1857
" oriens Sowerby,1834
" arenicola Rochebrunne et Mabille,1885
" hedeia " " "
" latemarginata Sowerby,1834
" " biradiata Frembl.,1834
" " cumingi Reeve,1849
" obovalis Lesson,1830
" peruviana Lamarck,1822
Section Cremides H. and A. Adams,1858
Cremides microtrema Sowerby,1834
Sub Family Fissurellinae
Genus Megatebennus Pilsbry,1890
Megatebennus patagonicus Strebel.
Genus Lucapinella Pilsbry,1890
Lucapinella callomarginata (Carpenter Mss.) Dall,1872

(con.)

Genus F*issurellidea*

Fi*ssurellidea* *hiantula* Lamarck,1822

Sub Family Emarginulinae

Genus P*uncturella* Lowe,1827

P*uncturella* *cognata* Gould,1852
" n*oachina* L.
" *conica* D'Orb.,1843
" *falklandica* A. Adams,1862

Genus *Glyphis* Carpenter,1886

G*lyphis* *patagonica* D'Orbigny,1843
" e*xquisita* Reeve,1850
" f*oveolata* Garrett,1872

The above paper contains a very interesting table of synonymy for the various species, and also a valuable bibliography

Minutes of the Conchological Club of Southern Calif.,Feb.7,1956

The February 7th meeting of the Conchological Club of Southern Calif. was called to order at 7:30 P.M. by president John Fitch. The minutes were read and corrected. The treasurer reported 42 paid members for the year. Mrs. Rose Burch introduced 8 guests and brought belated Christmas greetings from Allyn G. Smith,president of A.M.U.

Dr. Mattox, vice president and chirman of the program committee reported that very interesting meetings are planned for the spring months with time out in July for attending the AMU-AMUPD at San Diego and reports in August on some of the highlights of the meeting.

Mr. Fitch reviewed briefly the 4 field trips of the past year including the very successful one last week to Carponteria. With the indulgence of the group he will set the time and place for 3 more (1) Collecting in Newport Bay (2) San Mateo Point (3) A summer day hunting fossils under the direction of Mr. Kanakoff.

On a motion by Mrs. Rose Burch and seconded by Mr. Crawford Cate it was unanimously agreed that our club will be hosts at a small informal reception to be held the 10th of July, the evening preceeding the meeting of the AMU in San Diego, July 11-14.

A short break in the meeting allowed everyone to examine the interesting collections taken on the Carpenteria field trip.

For the program of the evening, Mr. John Fitch of the Fish and Game Dept, told in a vivid manner some of the startling and shocking facts concerning pollution along the Southern Calif. Coast. Since the problem of disposing of municipal sewage, run off sediment from highways and oil wells and particularly industrial waste, is increasing in direct proportion to our phenomenal growth in population, this matter deserves our immediate attention. Actual examples and photographs showing the deteriorating effects on all types of marine life left little doubt in the minds of all of us that we must act now. Since 1949 when this matter was taken away from the health department and the Dept. of Fish and Game and placed in the hands of the Dept. of Water Pollution, no basic standards have been set. As citizens living along a coast of unparalled beauty and recreational facilities and as scientists concerned with the preservation of all types of sea life, we should write to The Regional Water Pollution Control Board #4, Los Angeles Region, Room 504 Spring Arcade Bldg., Los Angeles 13. and demand that adequate standards be set immediately to stop the apalling conditions that now exist.

Respectfully submitted, Florence Thurlow,Secretary

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AMERICAN MALACOLOGICAL UNION
Joint Meeting with the A.M.U.P.D.
July 11-14, 1956 Wed. through Sat.
Lafayette Hotel, 2223 El Cajon Blvd.,
San Diego 12

Those wishing to present papers are urged to communicate as soon as possible with Allyn G. Smith, California Academy of Sciences, Golden Gate Park, San Francisco.

MINUTES 156
MARCH-APRIL 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

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The notice with title of paper, equipment required if any, and any preference of time may be included, This information must be in not later than May 25,1956.

Family Trochidae

Columella ending in a green callus surrounding the umbilicus. Norrisia
Columella twisted
. Columella with two folds..... Turcica
. Columella with 1 to 3 denticles... Tegula
Columella simple,not twisted
. Columella excavated and flattened... Monodonta
. Columella not excavated
.. Umbilicus closed or reduced to a chink
... Shell conical,base flattened... Calliostoma
... Shell turbinate or globosely conical ... Turcicula
... Shell cylindrical in the adult ... Halistylus
.. Umbilicus wide and open
... Inner lip raised or reflected
.... Umbilicus marginated, funnel shaped ... Solariella
.... Umbilicus not marginated... Cidarina
... Inner lip indistinct
.... Columella ending in a slight swelling... Gibbula
.... Columella curving evenly into the basal lip.. Margarites
.. Base with a false umbilicus ... Clanculus

Genus Norrisia Bayle,1880 Type (by monotypy),Trochiscus norrisii Sowerby.
Shell orbicular, thick, nearly smooth, chestnut brown
Diam. 40 mm. California to Cerros Island ... norrisii

Genus Turcica A. Adams,1854 Type (by monotypy),Turcica monilifera A. Adams
Shell conical,blackish, with tuberculate spiral ribs
Diam 16 mm. Redondo Beach, Calif. to Cape San Lucas.. caffea

Genus Tegula Lesson Type (by monotypy, fife Pilsbry,1889),Tegula elegans Lesson = Trochus pellis-serpentis Wood
Umbilicus closed
. Base flattened or concave
.. Surface sculptured
... Stromg axial plications present
Diam. 35 mm Catalina to Magdalena Bay... regina (Stearns)
... Granular spiral cords present
Diam. 40 mm. Gulf of Calif. to Panama... pelliserpentis(Wood
.. Surface smooth except for lines of growth
... Shell uniformly yellowish brown
Diam. 35 mm. Mendocino County to Cayucas... brunnea (Philippi
... Shell uniformly lusterless black
.... Shell large, 40 mm. or more in Diam.
Peru and Chile... atar Lesson
.... Shell small not over 25 mm. in Diam.
Peru and Chile ... moesta Jonas
. Base rounded, convex
.. Sculpture present, fine
... A narrow puckered band before the sutures
Diam. 35 mm. Vancouver to Cerros Island... funebrale (A.Adams
... Subsutural band present
Diam. 35 mm. San Francisco to Gulf of Calif. .. gallina Forbes
.. Sculpture absent Chile ... gaudichaudii Hupe

(con.)

Umbilicus open
. Axial sculpture present
.. Periphery strongly angulated
Diam. 40 mm. Bolinas Bay to Santa Barbara... montereyi Kiener
.. Periphery not strongly angulated
... A spiral row or tubercles below the sutures
Diam. 25 mm. Chile ... melaleuca Jonas
... Sculpture not tuberculate
.... All whorld spirally sculptured
Diam. 21 mm. Gulf of Calif. ... rufotincta Carp.
.... All whorls not spirally sculptured
..... Spiral sculpture obsolete on lower whorls
Diam. 25 mm. Santa Barbara to Magdalona Bay.. aureotincta Forbes
..... Spiral sculpture confined to the base
Diam. 27 mm. San Diego to Acapulco... rugosa A. Adams
Umbilicus open
. Axial sculpture absent
.. Distinct spiral keels present
... Periphery with a single spiral keel
.... Spiral keels nodulous
..... Spiral keels four
Diam. 25 mm. Peru and Chile ... quadricostata Wood
..... Spiral keels 1 or 2 on spire, 5 on base..
Diam. 12 mm. Santa Barbara to Peru ... mariana Dall
.... Spiral keels not nodulous
Diam. 40 mm. Peru and Chile ... luctuosa d'Orb.
... Periphery with 2 spiral keels
Diam. 20 mm. Gulf of Calif. to Chile rubroflammulata Koch
.. Spiral keels absent
... Spiral sculpture of numerous cords
.... Cords distinctly granular
..... Columella with a basal and median denticle
...... Columella and umbilicus white
Diam. 20 mm. Monterey to Acapulco ... ligulata Menke
...... Columella and edge of umbilicus green
Diam. 20 mm. San Pedro to Panama.. reticulata Wood
..... Columella with a basal denticle only
...... Last whorld carinated at the periphery
Diam. 8 mm. Gulf of Calif. ... globula Carp.
...... Last whorld rounded at the periphery
Diam. 15 mm. Peru and Chile .... patagonica d'Orb.
.... Cords not distinctly granular
..... Cords distinct over entire surface
...... Columella with a median denticle
Diam. 20 mm. Panama to Peru.. panamensis Philippi
...... Columella without a median denticle
.... Spiral cords equal
Diam. 13 mm. San Diego to Tres Marias Ids... impressa Jonas
.... Spiral cords unequal
Diam. 15 mm. Galapagos .... snodgrassi Pils. & Van.
..... Cords distinct on base only
Diam. 25 mm. Peru ... smithii T. & G.
... Spiral sculpture of fine striae or absent
.... Fine spiral striae present
..... Periphery strongly angulated
Diam. 30 mm. Sitka to Santa Barbara... pulligo Martyn

(con.)

..... Periphery rounded, not angulated
...... Spiral striae numerous
Diam. 15 mm. Peru and Chile ... fuscescens Philippi
..... Spiral striae few, delicate
Diam. 8 mm. Galapagos.... cooksoni E.A. Smith
Umbilicus open, continued
. Axial sculpture absent
.. Spiral keels absent
... Spiral sculpture of fine striae or absent
.... All sculpture absent
..... Umbilicus wide, funnel shaped
Diam. 45 mm. Peru and Chile .... euryomphala Jonas
.... Umbilicus small, circular
Diam. 20 mm. Peru and Chile ... tridentata P. & M.

The following not placed in the above key- T. coronulata C.B. Adams, C. lugubris and T, californica A. Adams

Genus Monodonta
Lip black marginated
Diam. 25 mm Peru and Chile ... crusoeana
Lip not black marginated
Diam. 25 mm. Peru and Chile... nigerrima

Genus Turcicula Dall,1881 Type (by monotypy) Margarita (Turcicula) imperialis Dall.
Spire with 3 spiral series of nodes
Diam. 42 mm. Bering Sea to San Clemente Id... bairdii Dall
Spire with a single spiral series of nodes
Diam. 60 mm. Panama... macdonaldi Dall

Genus Halistylus Dall,1889 Type (by original designation and monotypy), H. columna Dall.
Surface with close spiral striae
Length 9 mm. British Columbia to Panama... subpoideus Tryon

Genus Gibbula
Sculpture of about 6 smooth spiral cords
Diam. 4 mm. Monterey to San Diego canfieldi Dall

Genus Calliostoma Swainson,1840 Type (by subsequent designation Hermannsen,1846), Trochus colulus Linnaeus (= Calliostoma conula Martyn).
Umbilicus more or less open
. Shell depressed, apex rounded
Diam. 16.6 mm Gulf of Calif. rema Baker, Hanna & Strong
Umbilicus always closed
. Periphery angulated
.. Sides of whorls flattened or slightly concave
... Body whorl with 5 or 6 major spiral cords
Sitka to San Diego ... dolarius Holten
... Body whorl with numerous fine spirals
.... Basal cords about 12
Diam. 20 mm. Panama... iridium Dall
.... Basal cords about 20
Doiam. 22 mm. Panama... nepheloide Dall

(con.)

.. Sides of whorls flattened or concave
... Sides of whorls angulated near the middle
.... Body whorl with 3 to 5 spiral cords
..... Spiral cords nearly equal
Diam. 10 mm. Peru and Chile ... fonki Philippi
..... Spiral cords distinctly unequal
Diam. 6 mm. Monterey to San Diego... splendens Carp.
.... Body whorl with 15 or more spiral cords
..... Spiral cords smooth
Diam. 32 mm. Gulf of Calif. ... bonita, Baker, Hanna & Str.
..... Spiral cords granular
Diam. 15 mm. Gulf of Calif. ... palmeri Dall
... Sides of whorls rounded
.... Spiral cords equal in strength
..... Spiral cords fine and numerous
Diam. 22 mm San Francisco to San Diego ... gloriosum Dall
..... Spiral cords few but strong
...... Body whorl with 5 spiral cords
Diam. 12.5 mm. Pt. Conception to San Diego .. turbinum Dall
...... Body whorl with 7 to 9 spiral cords
Diam. 12 Forrester Island to San Diego.. annulatum (Humphrey)
.... Spiral cords unequal in strength
..... Spiral cords in two sizes
...... Body whorl with 2 or 3 major spiral cords
.... Entire surface tuberculate
Diam. 8 mm. Gulf of Calif. ... macandrae Carp.
.... Entire surface granular
Diam. 8 mm. Panama.. leanus Carp.
...... Body whorl with 4 or 5 major spiral cords
Diam. 7.5 mm San Pedro to San Diego ... supragranosum Carp.
..... Spiral cords in 3 sizes
Diam 25 mm Gulf of Calif. to Panama... lima Philippi
. Periphery rounded or flattened
.. Sides of whorls flattened or slightly concave
... Body whorl with 3 to 5 major spiral cords
Diam. 25 mm/ Puget Sound to Cerros Id.... variegatum Carp.
... Body whorl with 8 spiral cords in 3 sizes
Diam. 23 mm. Santa Barbara to Panama... antonii Koch
.. Sides of whorls not flattened or concave
... Sides of whorls angulated near the middle
.... Body whorl with 3 to 5 major spiral cords
Diam. 12 mm. Santa Cruz to San Diego ... tricolor Gabb
.... Body whorl with 15 or more spiral cords
Diam 23 mm. Catalina Island to Gulf of Calif.. eximium Reeve
... Sides of whorld rounded, not angulated
.... Body whorl with a single spiral cord
Diam. 32 mm. Farallones to San Diego... platinum Dall
.... Body whorl with more than 1 spiral cord
..... Spiral cords unequal in strength
...... Body whorl with 3 major spiral cords
Diam. 15 mm. San Pedro to Gulf of Calif.... gemmulatum Carp.
...... Body whorl with 6 major spiral cords
Diam. 12 mm. Gulf of Calif. ... gemmuloides Lowe
..... Spiral cords about equal in strength
...... Body whorl with 7 to 9 spiral cords
Diam. 18 mm/ Sitka to San Diego ... (costatum) ligatus
...... Body whorl with about 13 spiral cords
.... Base with 20 spiral cords
Diam. 13.5 mm Gulf of Calif. ... marshalli Lowe

.... Base with 16 spiral cords
Diam. 13 mm. Gulf of Calif.... angelenum Lowe

Genus Solariella Wood,1842 Type (by monotypy), S. maculata S. Wood

All sculpture obsolete
Diam. 19 mm. Monterey to Clarion Island... nuda Dall
Sculpture distinct
. Spiral of fine threads
.. Axial sculpture of narrow, threadlike ribs
Diam. 2 mm. Catalina Island... rhyssa Dall
.. Axial sculpture of numerous, oblique ribs
Diam. 6 mm. Arctic to San Diego.... varicosa M/. and H.
. Spiral sculpture of prominent rows of keels
.. Axial sculpture present, fine
Diam. 8 mm. Forrester Island to San Diego.. peramabilis Carp.
.. Axial sculpture absent
... Spire with three strong spiral cords
Diam. 7 mm. San Diego to Panama.. triplostephana Dall
... Spire with 6 major spiral cords
Diam. 15 mm. Galapagos... galapagana Dall

Genus Cidarina Dall,1909 Type (by original designation) Margarita cidaris A. Adams

Spire with several majorm equal spiral cords
Height 40 mm. Alaska to Cape San Quintin.. cidaria A. Adams
Spire with only 2 major spiral cords
. Spire with 2 minor cords in addition to the major
Height 21 mm. San Diego to Ecuador... equatorialis Dall
. Spire without minor spiral cords
Height 28 mm. San Diego to Gulf of Calif. ,,, ceratophora Dall

Genus Clanculus
Sculpture of 6 or 7 major and numerous minor spirals
Diam. 15 mm. Gulf of Panama... rubidus Dall

Genus Margarites Leach in Gray,1847 Type (by monotypy) Helix margarita Montagu = Trochus helicinus Fabricius,1780

Surface smooth or nearly so
. Shell depressed, surface bright and shining
Diam. 8 mm. Bering Sea to Catalina... helicina Phipps
. Shell globose conical, surface dull
Diam. 3 mm. Puget Sound to San Diego... lacunata Carpenter
Spire with 2 major and many minor spiral cords
. Base with 5 spiral threads
Diam. 3.5 mm. Alaska to Coronado Islands parcipicta Carpenter
. Base smooth or with fine spiral striae
Diam. 5 mm. Alaska to San Diego... lirulata Carpenter
Spire with 4 or 5 equal spiral cords
. Base with 5 spiral threads
Diam. Santa Barbara to Coronado Ids.... optabilis Carpenter
. Base with 8 spiral threads
Diam. 4.5 mm. Bodega Bay to Coronado Ids... acuticostata Carpenter
. Base with 12 spiral threads
Bering Sea to San Diego ... pupilla Dall

(con.)

. Base with about 20 spiral threads
Diam. 11 mm. Alaska to San Diego ... rhodia Dall
Spire with 7 low spiral threads
Diam. 4 mm. Alaska to San Diego ... succincta Carpenter

Family Trochidae

Genus Norrisia Bayle,1880
Norrisia norrisii (Sowerby),1838 Monterey to Cerros Island
Genus Halistylus Dall,1889
Halistylus subpoideus (Tryon),1887 British Columbia to Panama
Genus Tegula Lesson,1832
Tegula(Chlorostoma) funebrale A. Adams,1854 Vancouver to Cerros Id.
" " gallina Forbes,1850 San Francisco to Gulf of Calif.
" " montereyi Kiener,1850 Monterey to San Pedro
" (Omphalius) ligulata Menke,1850 Monterey to Panama
" " aureotincta Forbes,1850 Santa Barbara to Magdalena Bay
" " mariana Dall,1919 Santa Barbara to Peru
" (Chlorostoma) regina (Stearns),1893 Catalina to Gulf of Calif.
" " rugosa A. Adams,1851 San Diego to Acapulco
" (Omphalius) impressa Jonas San Diego to Tres Marias Ids.
" " reticulata (Wood),1828 San Diego to Peru
" " globula Carpenter,1857 Gulf of Calif. to Panama
" " pellissorpentis (Wood),1828 Gulf of Calif. to Panama
" " rufoflammulata Koch Gulf of Calif. to Panama
" " rufotincta Carp.,1857 Gulf of Calif.
" " panamensis (Philippi) Panama
" coronulata (C.B. Adams),1852 "
" semirugosa (A. Adams),1851 Galapagos
" cooksoni (E.A. Smith),1877 "
" snodgrassi (Pils. & Vanatta),1902 "
" quadricostatus Gray,1828 Peru and Chile
" smithi (T. & G.),1874 Peru
" patagonica (d'Orbigny),1840 Peru to Patagonia
" eiseni Jordan Pleistocene,Magdalena Bay
" barkeri Bartsch & Rehder,1939 Galapagos
" tridentata (P. & M.),1838 Peru and Chile
" atra (Lesson,1830 " "
" moesta (Jonas),1844 " "
" euryomphalus (Jonas),1844 " "
" luctuosa (d'Orbigny),1841 " "
" fuscescens (Philippi),1844 " "
" gaudichaudi Hupe,1854 Chile
" lugubris (Philippi),1844 "
" melaleuca (Jonas),1844 "
Genus Monodonta Lamarck
Monodonta nigerrima (Gmelin),1791 Peru and Chile
" crusoeana Pilsbry,1889 " "
Genus Calliostoma Swainson,1840
Calliostoma splendens Carpenter,1864 Monterey to San Diego
" annulatum (Humphrey),1766 Alaska to San Martin Id.
" ligatus (Gould),1849 Alaska to San Diego
" dolarius (Holten),1803 Alaska to San Diego
" variegatum Carpenter,1865 Puget Sound to Cerros Id.
" platinum Dall,1889 Farallones to San Diego
" antonii Koch,1843 Santa Barbara to Panama
" gloriosum Dall,1871 San Francisco to San Diego (con.)

Calliostoma eximium Reeve,1842 Catalina to Gulf of Calif.
" gemmulatum Carpenter,1864 San Pedro to Gulf of Calif.
" tricolor Gabb,1865 Santa Cruz to Cape San Lucas
" supragranosum Carp.,1864 Monterey to San Diego
" turbinum Dall,1895 Pt. Conception to San Diego
" palmeri Dall,1871 Gulf of Calif.
" leanus C.B. Adams,1852 " to Panama
" macandrae Carp.,1856 "
" lima Philippi,1850 " to Panama
" marshalli Lowe,1935 "
" gemmuloides Lowe,1935 "
" angelenum Lowe,1935 "
" bonita B.H. & S.,1933 off Acapulco
" rema B.H. & S.,1933 Treas Marias Ids. to Acapulco
" nepheloidea Dall,1913 West Mex. to Panama
" iridium Dall,1895 Panama
" fonkii Philippi,1860 Peru and Chile
Genus Turcicula Dall,1881
Turcicula bairdii Dall,1889 Bering Sea to Coronado Ids.
" macdonaldi Dall,1889 Panama
Genus Turcica A. Adams,1854
Turcica caffea Gabb,1865 San Pedro to Cape San Lucas
Genus Cidarina Dall,1909
Cidarina cidaris A. Adams,1864 Alaska to San Quintin
" ceratophora Dall,1895 San Diego to Mazatlan
" equatorialis Dall,1908 " to Ecuador
Genus Gibbula Risso,1826
Gibbula adriatica canfieldi Dall,1871 Monterey to San Diego
Genus Solariella Wood,1842
Solariella peramabilis Carp.,1864 Forrester Id. tp Coronado Id.
" rhyssa Dall,1919 Catalina
" triplostephanus Dall,1910 San Diego to Panama
" nuda Dall,1896 Monterey to Gulf of Calif.
" elegantula Dall,1925 La Paz
" ceratophora Dall,1896 Gulf of Calif.
" equatorialis Dall,1908 Panama to Ecuador
" galapagana Dall,1908 Galapagos
Genus Velutonia
Velutonia galapagana Dall,1918 Galapagos
Genus Clanculus
Clanculus rubida Dall,1908 Panama and Galapagos
Genus Margarites Leach,1847
Margarites parcipicta Carpenter,1864 Alaska to San Diego
" pupilla Gould,1849 Bering Sea to San Diego
" rhodia Dall,1920 Alaska to San Diego
" simbla Dall,1913 Santa Barbara Island
" succincta Carpenter,1864 Alaska to San Diego
" lacunata Carpenter,1864 Neah Bay to San Diego
" lirulata Carpenter,1864 Alaska to San Diego
" acuticostata Carpenter,1864 Bodega Bay to Guadalupe Id.

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Publications Received

The Family Melongenidae in the Western Atlantic by William J. Clench and Ruth D. Turner- Johnsonia, Vol.3, No.35, Jan.30,1956.

The host of different forms of this group combined with the many names applied to them have made this an unusually puzzling matter. The authors here seem to have covered them thonoughly and this work will meet with pleasurable acceptance.

The forms of the *Melongena corona* complex are well figured and described.

No doubt a number of others will join the editor here in changing several labels including the generic name *Semifusus morio* to *Pugilina morio* Linne.

The Nautilus, Vol. 69, No.3, January,1956

Observations of Predation on Echinoderms by Three Species of Cassisidae by Donald R. Moore.

This is an exceedingly interesting paper and the first observation to come to my attention re the feeding habits and prey of *Cassis*. It would be interesting to know whether or not the other species of the family such as the *Cassis cornutus* of the Central Pacific or the east African *Cassis rufa* and others also enjoy urchins.

Notes on the Stinging Operation of Conus by George F. Kline

Interesting observations of various species of *Conus*, and the stinging and killing of other mollusks.

Remarks on I. Born's Index Rerum Naturalium Musei Caesarei Vindobonensis ,1778, by R.F. Rutsch. This is of interest because many of us have been familiar with Born's " Testacea.." and so disposed to date all Born species as of 1780.

Water Circulation in the Mantle Cavity of the Owl Limpet Lottia Gigantea Gray by Donald P. Abbott.

A New Bostryx From Peru by H.A. Pilsbry.

Beach Drift Polygyridae From Southern Texas by Henry A. Pilsbry and Leslie Hubricht

Fresh-Water Mollusks and Stream Pollution by Charles B. Wurtz.

Observations on the Recently Extinct Mollusk Fauna of Panamint Lake by Joshua L. Baily Jr. This is interesting because of the interest in the Pleistocene lakes Lahontan and Bonnieville. The material here studied came from the lake in Inyo county and the authors comments are of great interest to those concerned.

Statistics on a Colony of Cepaea Nemoralis by M. Alan Landman.

Nuova revisione delle conchiglie marine di Sicilia by Dott. Ing. Ottavio Priolo. Acad. Gioenia di Scienze Naturali in Catania Memoria VIII,1955. 4to pages 215-257, 1 pl.

This work is printed on unusually fine and heavy paper. Too many fine publications come to my desk printed on little better than newsprint.

In this work the author gives lengthy and valuable synonymy of all the species. Among those covered are *Rissoina*, *Barleeia*, *Paludinella* (Fam. Assimineidae), *Adeorbis* (Fam. Adeorbidae), *Vitrinella*,*Truncatella*, *Homalogyra*,*Ammonicera*,*Rissoella*, *Mesalia*, (Fam. Turritellidae), *Turritella*, *Mathilda*,*Philippia* (Fam.Solariidae),*Torinia*,*Solarium*, *Vermetus*...

Much of the authors work is of unusual interest not only for the synonymy but for the generic arrangements. For an example we have been disposed to give *Bivonia* generic value but the author here considers it a subgenus. A complete coverage of this fauna in this manner will make an invaluable work for the Mediterranean.

Notes on some New Caledonian Placostylus by T. Pain- Journ. de Conchyliologie, Vol. XWV,1955, Paris, One new species and four new subspecies are described and figured.

On Some Small Collections of Inland Shells from South America by Fritz Haas, Fieldiana-Zoology, Vol.34, No.35, Dec.29,1955. pages 361-387,15 illustrations. This will be of great interest and value to any one working with the South American land fauna.

New Marine Mollusks from Florida by Thomas L. McGinty- Proc. Acad. Nat. Sci, Phil.,Nov.23,1955.

Fourteen new species of deep water mollusks are carefully described and figured. A new genus is described, the radular teeth figured and seems to be very distinct. It is Fusilatirus (Fam. Fasciolariidae). Another new genus described is Aclistothyra (Fam. Galeommidae).

The new species and genera will occupy those who maintain faunal check lists, but the rarity of the species will no doubt concern few.

Mollusques nouveaux de Cote d'Ivoire.Prosobranches d'eau douce. Revue Suisse De Zoologie, Tome 62, Nov.1955 by Eugene Binder. 10 pages and 18 text illustrations.

Los Pupillidae (Pulmonata,Stylommatophora:Orthurethra) Collectados En Venezuela Septentrional by Sergio Arias C. Sociedad De Ciencias Naturales La Salle, Memoria- Tomo XV, no.41, Mayo-Agusto,1955.

This is quite a thorough paper on this family in Venezuela- 40 pages with text figures ,keys, full data and bibliography.

Basteria- Vol. 19, No.4, Pag. 45-76, 24-XII-1955.
The Life cycle and some other biological details of the fresh-water snail Physa fontinalis (L.) (con.) by W.F. De Witt.
Notes on Oxyloma verrili (Bland) by L.A.W.C. Venmans
Rectification and Addition by L.A.W.C. Venmans

Circulares Del Museo y Bibliotheca De Zoologia De La Habana
Ed. : M.L. Jaume, 13 No, 351, Vedado Habana,Cuba- Price $1.50 per 100 pages. Nov.-Dec.,

Gulf of Mexico, Its Origin,Waters and Marine Life- Fishery Bulletin 89. This is a sizable and valuable contribution 604 pages, and some illustrations. However, it is obviously devoted rather more to other groups than to mollusks. There are several worth while papers in it though-
Mollusks by Harald A. Rehder. Dr. Rehder gives and outline of the faunas with rather a good bibliography.
Cephalopoda of the Gulf of Mexico by Gilbert L. Voss
Summary of our knowledge of the oyster in the Gulf of Mexico by Philip A. Butler
Oyster Reefs of the Gulf of Mexico by W. Armstrong Price.

This bulletin is for sale for $3.25 (May be had from John Q. Burch).

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In glancing over the current issue of the Australian Fisheries Newsletter I note a diagram of a trawl- title " New Canadian Mid-Water Trawl". Such a diagram gives me nostalgic memories of the days when we had our own boat in the water and would attempt to make anything new like this- on smaller design,of course.

Minutes of the Conchological Club of Southern California

The regular meeting of the Conchological Club of Southern Calif. was called to order by President Mr. John Fitch, at 7:30 P.M. March 6.

21 members were present, 2 guests were introduced by Mrs. Rose Burch, who also reported that Mrs. Turver and Mrs. Brown were absent and on the sick list for tonight.

The minutes were approved as read. A communication from Allyn G. Smith, President of the A.M.U. thanked us in advance for the club's thoughtfulness in planning a small reception on July 10, the evening prior to the opening of the meetings of the A.M.U.

The Treasurer reported 51 paid members to date.

Our President announced that a list of the 1955-56 membership is being compiled for distribution, Considering the short time we have each month, this should facilitate our getting together for visits and viewing each others collections between meetings.

Mr. Fitch also went over the details pertaining to the Field Trip on Sunday, March 25, in upper Newport Bay. A minus .2 tide between 2:30-3:00 P.M. plus a variety of collecting areas, rocky, mud flat, etc., should make this a good day. Parking space will probably be available at the "Castaway" resort at the top of the cliff. (To your left going south off the main highway,101, just before you cross the channel.)

On a motion by Mrs. Emery Chace, and seconded by Mr. Crawford Cate, it was unanimously decided to dispense with the business at the next meeting in April in order to take advantage of two excellent programs. One will deal with collecting at Punta Penasco, Mex., including pictures & specimens. The other will cover the Abalone in its natural habitat as shown in films.

Three publications were brought to our attention. First, Mr. Crawford Cate mentioned a short article with excellent colored pictures in the current issue of "Sports", March 3, now on sale. Mr. John Q. Burch told of an article, "In Defense of Subspecies" by S.D. Durant, appearing in Systematic Zoology, pp.186., Vol. 4, Dec. '55, #4. Also mentioned was a pamphlet with fine illustrations, "Tonnacea", A Guide to the Common Marine Snails from East Africa to Polynesia", by Sally Diane Kaicher. (Available through John Q. Burch.)

After our usual "break" in the meeting we resumed with the program portion of the evening being taken over by Dr. Mattox. He gave a summary of "A Report On the Family Arcidae", by Helen Rost-Allan Hancock Pacific Expeditions, Vol.20,#2,1955. Individual copies of a mimeographed outline and excellent examples of each Genus & Subgenus made this an unusually clear and concise review.

We closed with congratulations to our President Mr. John Fitch, who has just been made head of the Laboratory for the Fish & Game Dept. at San Pedro. The meeting was then adjourned.

Respectfully submitted,
Miss Florence E. Thurlow, Secretary

MINUTES 157
MAY 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor,- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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We are pleased to report that we have been receiving letters from our correspondents in the east saying " Will be seeing you at the meeting of the A.M.U. in San Diego in July. It looks as if we are going to have a great meeting.

American Malacological Union- Joint meeting with the A.M.U.P.D.
July 11-14,1956. Wed. through Sat.
Lafayette Hotel, 2223 El Cajon Blvd., San Diego 12
It is hoped that most will be registered for a get together on the evening of July 10, the night before the opening of the meeting.

Family Bursidae

Genus Bursa Roeding,1798 Type (bu subsequent designation ,Jousseaume,1881), Bursa monitata Roeding = Murex bufonius Gmelin.

A single row of strong nodules on the shoulder
. Surface above and below the shoulder smooth
Height 40 mm. Lower Calif. to Panama ... nana
Reeve, Ranella, pl.68, fig.29,; Tryon, vol.3, p.38
. Surface smooth between spiral lines of granules
Gulf of Calif. to ... albifasciata
Reeve pl.6, fig.27
. Surface spirally striated, slightly granular
Height 126 mm. Monterey to Cerros Id.... californica
Reeve pl.2, fig.9; Oldroyd 2-2-241.
Two unequal spiral series of nodules, fine beaded threads
Height 45 mm. Lower Calif. to Panama ... calcipicta
Bull. Mus. Comp. Zool. 43-320
Several spiral series of double nodules, surface striated columella with white granular wrinkles
Height 40 mm. Gulf of Calif. to Peru.... caelata
Reeve pl.3, fig.10; Tryon vol.3, p.41
Surface obscurely rugose or smooth
Height 75 mm. Peru ... ventricosa
Reeve pl.2, fig.6; Tryon vol.3, p.40.

Bursa californica Hinds,1843 Monterey to Guaymas
" nana (Brod. & Sowerby),1829 Lower Calif. to Panama
" albifasciata (Sowerby),1841 Gulf of Calif. to
" caelata (Broderip),1832 Gulf of Calif. to Peru
" calcipicta Dall,1908 Lower Calif. to Panama
" (Crossata) ventricosa (Broderip),1832 Nicaragua to Chile

Family Cymatiidae

Genus Cymatium Roeding,1798, Type (by subsequent designation, Dall, 1904), Murex femoralis Linnaeus,1758= Cymatium femorale Roeding.

Shell pyriform, with a pointed spire and moderate to long canal
. Whorls regular .... Cymatium
.. Whorls distinctly triangular
... Sculptures with 3 smooth spiral cords only-no dentation
Height 150 mm. Magdalena Bay to Panama... tigrinum
Reeve pl.8, fig.27; Tryon vol.3, p.18, pl.10, figs 71,72
... Axial ribs faintly noduled or warty.. 4 varicose denticles
Height 60 mm. San Pedro to Peru ... gibbosum
Reeve pl.13, fig.38; Tryon, vol.3, p.23, pl.12, fig.101
.. Whorls not distinctly triangular
... Spiral ribs tuberculate over entire surface
Height 85 mm. San Pedro to Gulf of Calif. .. tremperi
Reeve pl.3, fig.13
... Spiral ribs tuberculate on the shoulder only
.... Tubercles large
..... Spiral cords equal, flat, strap like
Height 33 mm. Gulf of Calif. ... adairense
Nautilus 24, p.33; Proc. USNM vol.66, pl.35, fig.1
..... Spiral cords alternating in size
Height 35 mm. Galapagos .... lineatus
Reeve pl.2, fig.4; Tryon, vol.3, p.14, pl.8, fig.51

(con.)

.... Tubercles small, more or less obsolete
..... Spiral ridges very strong, sometimes double
Height 100 mm. Magdalena Bay to Peru ... costatum
Reeve pl.10, fig.32; Tryon, vol.3, p.11
..... Spiral ridges regular, flat, equidistant
Height 65 mm. West coast ?... cingulatum
Reeve pl.11, fig.35; Tryon vol.3, p.15
..... Spiral ridges faint, irregular
Height 75 mm. Gulf of Calif. to Peru... weigmanni
Reeve pl.11, fig.37; Tryon, vol.3, fig.15, pl.9, fig.57
... Spiral ridges crenulated, not tuberculate
.... Columella and lip blood red, wrinkles white
Height 100 mm. Gulf of Calif. to Peru... pilearis
Reeve pl.7, fig.23; Tryon vol.3, p.12, pl.6, figs 31-34
.... Columella and lip blackish purple, wrinkles white
Height 100 mm. Cerros Id. to Peru... vestitus
Reeve, pl. 20, fig.101; Tryon vol.3, fig.12
.... Columella yellowish, a double row of white teeth
Height 30 mm. Gulf of Calif. to Ecuador... lignarium
Reeve pl.13, fig.40; Tryon vol.3, p.15, pl.9, fig.63
. Whorls distorted ... Distorsio
.. Columella with large, irregular granules
Height 50 mm. Lower Calif. to Panama ... decussata
Reeve pl.12, fig.41; Tryon vol.3, pl.17, fig. 176
.. Columella with strong wrinkles
Height 50 mm. Panama ... ridens
Reeve pl.12, fig.46; Tryon vol.3, pl.17, fig.177
Shell ovate, spire and canal short
. Columella wrinkled or dentate .... Argobuccinum
.. Sculpture nodulous
...Shell brown, banded, rubbed nodules white
Height 100 mm. Chile ... ranelliform
Tryon vol.3, p.45, pl.24, fig.62; Reeve, Ranella, pl.3, fig.13
... Shell yellowish brown, columella nearly smooth
Height 50 mm. Chile ... rude
Reeve, Triton, pl.14, fig.53; Tryon, vol.3, p.34, pl.16, fig.169
.. Sculpture sharply cancellated
Height 60 mm. Ecuador to Chile ... scaber
Reeve, Triton, pl.11, fig.34; Tryon, vol.3, p.34, pl.16, fig.168

Cymatium (Cabestana) gibbosum (Brod.),1833 San Diego to Peru
" corrugatum tremperi Dall,1907 San Pedro to Gulf of Calif
" vestitum (Hinds),1844 Cerros Id. to Peru
" costatum (Born),1778 Cosmopolitan. Magdalena Bay to Peru
" tigrinum (Bro.d),1833 Magdalena Bay to Panama
" adairense Dall,1910 Gulf of Calif.
" pileare (Linnaeus),1758 Cosmopolitan. Gulf of Calif. Panama
" weigmanni Anton,1839 Gulf of Calif. to Peru
" lignarium (Brod.),1833 Gulf of Calif. to Ecuador
" amictum (Reeve) Philippines, West Mexico
" lineatum (Brod.),1833 Galapagos
" cingulatum (Lamarck) Indo Pacific, Peru
" anomalum (Hinds),1844 Nicaragua
" olearum (Deshayes) West Indies, Gulf of Calif.
Distorsio decussata (Valenciennes),1833 Lower Calif. to Peru
" constricta (Broderip),1833 Central America to Panama
Argobuccinum scabrum (King),1831 Ecuador to Chile

(con.)

Argobuccinum rude (Broderip),1833 Chile
" ranelliformis (King),1831 Chile
Genus Tritonharpa Dall,1908
Tritonharpa vexillata Dall,1908 Galapagos
Genus Craspedotriton
Craspedotriton scalariformis (Broderip),1833 Gulf of Calif. Panama

Family Strombidae
Genus Strombus Linnaeus,1758

Shoulder of whorls tuberculate
. Body whorl smooth
Length 3 inches Lower Calif. to Ecuador gracilior
. Body whorl with spiral row of nodes
.. Spire turrited, strongly tuberculate
Length 3.5 inches Gulf of Calif. to Peru.. granulatus
.. Spire despressed, spirally ribbed
5 to 7 inches. Tres Marias Ids. to Peru... peruvianus
Shoulder of whorls not tuberculate
Length 8.5 inches. Gulf of Calif. to Panama... galeatus

Strombus gracilior Sowerby,1825 Lower Calif. to Ecuador
" granulatus Swainson,1823 Gulf of Calif. to Peru
" galeatus Swainson,1823 " to Panama
" peruvianus Swainson,1823 Tres Marias Ids., to Peru

Family Fasciolariidae

Key to Genera

Columella plicate
. Outer lip with a tooth-like projection at the base..Leocozonia
. Outer lip not toothed
.. Anal fasciole distinct
... Canal short, wide, spire short or moderate... Fasciolaria
... Canal distinct, narrow, spire turrited,,, Latirus
.. Anal fasciole absent
... Axial sculpture predominating ... Metzgeria
... Spiral sculpture predominating ... Ptychatractus
Columella smooth .... Fusinus

Genus Leucozonia Gray (Proc. Zool. Soc. London, pt.15, p.136; type by original designation, Murex nassa Gmelin (Turbinella cingulifera Lamarck)

Leucozonia cingulata (Lamarck),1822 Gulf of Calif. to Ecuador

Genus Fasciolaria Lamarck, 1799 Type (by monotypy), Murex tulipa L.

Shell fusiform, with a moderate spire
. Aperture orange, outer lip with raised red spiral lines
8 to 9 inches Gulf of Calif. to Peru ... princeps
Reeve, pl.1, fig.3; Tryon, vol.3, p.75
Shell pyriform, with a short spire
. Epidermis olive colored, aperture salmon tinted
4 to 5 inches. West Mexico to Panama... salmo
Reeve pl.3, fig.7; Tryon, vol.3, p.78
. Epidermis brown with black granules, aperture orange
5 to 7 inches. West Mexico to Panama... granosa
Reeve, pl.3, fig.6

Fasciolaria princeps Sowerby, 1825 Magdalena Bay to Peru
" granosa Broderip, 1832 Gulf of Calif. to Panama
" salmo Wood, 1820 West Mexico to Panama

Genus Latirus Montfort, 1810 Type (by original designation)-Latirus auranriacus Montfort(Murex filosus Lamarck- Murex gibbulus Gmelin)

Axial ribs tuberculate at the shoulder of the whorls
. Spiral ridges narrow, close-set, sharp on spire and base
Brown streaked, ridges whitish
2 to 2.5 inches Panama candelabrum
Reeve, Turbinella, pl.2, fig.8; Tryon, vol.3, p.88
. Spiral ridges rounded, numerous, strongly tuberculate
Whitish, tubercles bluish
Central America to Ecuador.... tuberculosus
Reeve, Turbinella, pl.8, fig.42
. A few strong spiral ridges with spiral striae between
.. Four spiral ridges below the shoulder of body whorl on base
White, stained and spotted with rusty brown
2 to 3 inches. Gulf of Calif. to Ecuador ... ceratus
Reeve, Turbinella, pl.7, fig.37; Tryon, vol.3, p.88
.. Six spiral ridges below the shoulder of the body whorl on base
Whitish, epidermis blackish... Panama.. rudis
Reeve, Turbinella, pl.10, fig.51

(con.)

Axial ribs not tuberculate
. Spiral ridges on canal only
Reddish orange,epidermis bright chestnut
2 to 2.5 inches Panama (*castaneus*) *mediamericanus* Hertlein & Strong 1951
Reeve,Turbinella, pl. fig.26; Tryon, vol.3, p.91
. Spiral ridges over the entire surface
.. Axial ribs about 15
Orange brown, ribs darker
2.5 inches Galapagos .... *varicosus*
Reeve,Turbinella, pl.2, fig.6; Tryon vol.3, p.92
.. Axial ribs about 10
... Spiral ridges rather broad, close-set
Reddish yellow,ridges sometimes darker
.85 inches. Acapulco to Panama ... *concentricus*
Reeve,Turbinella, pl.1, fig.2 & 44; Tryon, vol.3,p.90
... Spiral ridges irregular, obtuse
Reddish brown Panama... *tumens*
Tryon vol.3, p.91

Latirus ceratus (Wood),1820 Gulf of Calif. to Ecuador
" *concentricus* (Reeve),1847 Acapulco to Colombia
" *tuberculatus* (Broderip),1833 Central America to Ecuador
" *rudis* (Reeve),1847 Panama
" *mediamericanus* Hertlein & Strong,1951 Acapulco to Panama (new name for *castaneus* Reeve)
" *candelebrum* Reeve,1847 Panama
" *tumens* (Carpenter),1856 Panama
" *varicosus* (Reeve),1847 Galapagos

Taxonomy

The reluctance of many curators and dealers to accept changes in nomenclature is easily understood. It is so much simpler to simply perpetuate an error. As a dealer I am well aware of the fact that a list following the latest known syatematics unless accompanied with a fair synonymy would result in complete confusion on the part of many collectors. I know that I have been guilty on many occasions of using a name I knew to be incorrect. Otherwise I find that I am answering a host of questions. This takes time obviously. A few of the queries received almost daily might be of passing interest. My answer to the collectors will follow, and if by chance I am in error please do not hesitate to advise me.

Your query re the status of *Babylonia* F. Schluter,1838 and *Eburna*. *Babylonia* is definitely the correct name for the Japanese shells and others often labelled *Eburna*. Lamarck used the name *Eburna* twice. First in 1801 for a group of the family Olividae. In my own collection now I have shells labelled *Ancilla* (*Eburna*) *glabrata* (Linne) using Lamarck's *Eburna* of 1801 as a subgenus. Later in 1822 Lamarck again used *Eburna* for the above mentioned group. It is obvious that the matter rests as I see it *Babylonia* F. Schluter, 1838 with in synonymy *Eburna* Lamarck,1822 non Lamarck,1801.

You ask about the name *Uber uber* in one of your books. The source of the generic name *Uber* was the Museum Calonnianum 1797. According to Opinion 51 of the International Commission of Zoological Nomenclature this work is not to be accepted for any nomenclatorial work. The next available name is *Polinices* Montfort,1810 and *Uber* is an absolute synonym of *Polinices*. The correct name of your shell is *Polinices uber* (Valenciennes),1833.

You ask about *Pyrene* and *Columbella*. Briefly *Pyrene* (Bolten)Roding 1798 covers shells with a smooth exterior other than some few low cords on the lower part of the body whorl. *Columbella* Lamarck 1799 covers shells with spiral striations on the whole exterior. As far as I know there are no species of *Columbella* known from the west coast. It is true that in your older works you will find this generic name applied to all of our species including those now placed in other genera such as *Mitrealla*. It is obvious that *Pyrene* is the older name, and some authors have used with some reason *Columbella* as merely a subgenus of *Pyrene*.

You mention having difficulty separating your specimens of *Ocenebra interfossa* into the subspecific groups. This has a very familiar ring. The only thing to bear in mind is that if you can find no intergrades anywhere, you should have a species and not a subspecies. In fact, there are some who refuse to recognize a name as a subspecies in the absence of an intergrade. Without the shells at hand I would prefer not to risk an opinion.

You ask which is correct *Lischkeia* P. Fischer,1880 or *Turcicula* Dall 1881. As I see it these are two different but valid genera. The *Lischkeia* should contain all of the Japanese species you mention, *alwinae*,*argenteonitens*,*crumpii* etc. (there are others).*Turcicula* is another genus but has been applied to these shells by some authors.

*** The above are mere samples of almost daily occurence. If such things interest any of the readers of these papers I would be pleased to hear of it and might carry on with others.

Mr. E.P. Chace of the Natural History Museum of San Diego has called my attention to the fact that an important paper had been overlooked in listing the family Fissurellidae in Minutes 155, p.6,Feb.,1956.

Dr. S. Stillman Berry in Leaflets in Malacology, Vol. I, No.12, July 1,1954 described a new genus to contain the species described as Fissurella beebei Hertlein and Strong,1951. The name given by Dr. Berry is Stromboli . Therefore the following should be added to the list in Minutes 155,p.6:

Genus Stromboli Berry,1954 Type (by original designation,Fissurella beebei Hertlein and Strong,1951)

Stromboli beebei (Hertlein and Strong),1951.

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Some Publications Received

Duivelsklauwen,boksbeugels,schorpioenen of enterhaken (Een voorlopige samenvatting) door L.J.M. Butot. In Penggemar Alam Dec.,1955, Bogor, Indonesia.

Scorpion Shells by L.J.M. Butot. This is rather a thorough discussion, some 15 pages and 3 plates illustrating numerous figures. The work is in Dutch with an English summary.

The paper treats the genus Lambis Roding 1798(= Pterocera Lamarck, 1822) in Indonesia. While the extensions of range are of passing interest, some of the authors assignments to both genera and species are of great interest. The author recognizes 11 species with 3 others in doubt- L. sowerbyi(Morch 1872),L. robusta (Swainson 1834), and L. voldii (Morch 1852). Among others of unusual interest to this reader is the recognition of Lambis chiragra (Linne 1758) and Lambis arthritica (Roding 1798) (= L. rugosa (Sowerby) as distinct species and the plate of figures make a very strong case for the authors decision. After handling perhaps thousands of specimens of them it had been my opinion that they were conspecific in spite of the fact that many of the locality records indicate easily separable races. It has seemed to me that it would be very easy to separate a lot from for example Zanzibar and one from Zamboanga. It is obvious that if they are conspecific the name must be Lambis chiragra and I will confess that I have all of mine so labelled now. However, if by studying the authors figures in this paper I am unable to find any intergrades I will be convinced. The author mentions some that I have never seen i.e. Lambis pseudoscorpio (Lamarck 1843).

The countless color variations and races in Lambis make them an interesting and at times puzzling group.

Journal of the Marine Biological Association of the United Kingdom Vol. 35, No. 1, 1956. There are a number of large and interesting papers in this issue pertaining to mollusks. However, a good part of them are rather moref for the biochemist than for the systematic student.

Porphyrin Pigments in the Tectibranch Mollusc Akera bullata O.F. Muller by G.Y. Kennedy.

Vitamin A and Carotenoids in Certain Invertebrates- IV Mollusca: Loricata,Lamellibranchiata, and Gastropoda By L.R. Fisher et al; V Cephalopoda Studies on the Biology of Limpets 1. The Late J.H. Orton's Work on Patella by A.J. Southward & J.M. Dodd II The Breeding of Patella vulgata L. in Britain- This is a very thorough paper with numerous plates, one in color; Neurohormones of Invertebrates- 1 Cardio-Regulators of Cyprina and Buccinum by John H. Welsh ; Filterimg,Feeding, and Digestion in the Lamellibranch Lasaea rubra by Dorothy Ballantine

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

April 3,1956

The April 3rd meeting of the Conchological Club of Southern Calif. was called to order by the predident, Mr. John Fitch.

In view of the interesting program, the business was dispensed with except for the following announcements:

1. Dr. Mattox gave a list of marine biologists from all parts of the world who will be participating in a series of lectures at the Allan Hancock assembly hall on the U.S.C. campus during the following week.
2. Dr. Howard has reprints available on articles he has previously published; " Some Viviparous Pelecypod Mollusks" and " A River Mussel Parasitic on a Salamander".
3. Mr. Chace will be glad to take any shells to Ruth Coats for distribution to eastern guests attending the A.M.U. meeting in San Diego.

Our first speaker for the evening was Mr. John Tyler, marine photographer and member of the 1939-40 series of expeditions for the Allan Hancock Foundation. His color motion pictures of the marine life at Cholla Bay, Mexico taken over a period of 4-5 years were outstanding for their beauty and valuable information to shell collectors.

At our usual mid-meeting break, it was a delight to inspect first hand many of the stars performing in person in the more than 20 marine aquarium homes.

The second speaker was Mr. Keith Cox of the California Fish and Game Dept. As he is the only acredited full suit diver with the department, his valuable information and fine motion pictures of the work of tagging and transplanting abalones from northern Calif. to the chhannel islands, was of great interest to the members pf the club as well as the colorful resume of the long history of the fishing for abalone in California.

The meeting was then adjourned. Respectfully submitted,

Miss Florence E. Thurlow, Secretary

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May 1,1956

The regular meeting of the Conchological Club of Southern Calif. was called to order on Tuesday evening, May 1st at 7:30 P.M. by vice-president , Dr. Norman Mattox, in the absence of our president, Mr. John Fitch.

A warm welcome was extended to the 36 members present, including our guests, Mrs. Fay Howard, Mr. and Mrs. Lyons and Mr. Carl Julius Stuebel of the Sierra Club and the Museum Club.

The minutes were approved as read. The treasurer, Mrs. D.D. Brooks, reported 54 members to date this year. She also distributed pamphlets that have been compiled for our convenience, with a complete list of the members, their addresses and telephone numbers.

Mrs. John Q. Burch gave a brief account of their recent trip to the east coast. Not only were they able to renew old and make new acquaintances with many persons well known in the fields of science (especially conchology) ,but they also had the opportunity of visiting the Smithsonian Institution, American Museum of Natural History, the New York Shell Club, Harvard University and the Academy of Natural Sciences of Philadelphia. Added to this was the wonderful way in which they were entertained by " shell friends" and the grand visit with their son, his wife and children in Washington.

Under publication announcements, Mr. Burch declined to report, stating so much had piled up during his absence a general survey of the situation will be given at the next meeting.

Mr. Kanakoff appealed to our group to send any spare specimens to Mr. Raymond Shaffart, Osstende, Belgium.

Three members of our group are on the sick list: Dr. Howard Hill is in the Prairie Field Hospital following an emergency appendectomy. Mr. Harry Turver is in the St. Francis Hospital in Lynwood for surgery. Mr. Lloyd E. Berry is in the Wadsworth Hospital, Veterans Administration, 4th floor. It was moved unanimously that the secretary send a card of good wishes to each of these members.

Among the younger generation, Mrs. Dorothy Brown was happy to report that her daughter had won 1st prize for her shells at a science exhibit at Hollywood High, and Peter Hasland won 2nd price with his shells at Fairfax High.

Mimeographed copies of the complete program for the remainder of the year were given out by Dr. Mattox. The efforts of him and his committee in securing such fine speakers will be more than reapid, for after a brief explanation of each subject, we all feel that we cannot afford to miss a single meeting this year.

As there was no further new or old business, our mid meeting break was enlivened by a drawing for door prizes. They included several *Conus fergusoni* , Bahia Bulebra, Costa Rica and enough *Polypita picta*, Cuba for all to have some. Many thanks to Ted Dranga who had Mrs. John Q. Burch bring these as a gift to our club.

For the program this evening, Mr. Jens Knudsen of the Hancock Foundation showed many beautiful slides taken on a recent expedition sponsored by Mr. Patrick Doheny. La Paz, Mexico was the starting point of this trip which then continued to Las Tres Marias off the coast of West Mexico, and concluded at Mazatlan. Such intimate glimpses of marine and shore life would have done real credit to a Walt Disney crew of professional cameramen. We were very fortunate to have such a delightful evening of pictures and description by Mr. Knudsen.

The meeting was then adjourned. Respectfully submitted,
Florence E. Thurlow, Secretary

MINUTES 158

JUNE 1956

CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

There will be no regular meeting of the Conchological Club in July. It is expected that all of the active members will meet with the American Malacological Union in San Diego.

Please mail all news to your editor, John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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We wish to take this oportunity to thank our many friends who entertained us so cordially during our recent trip east, and we sincerely hope to have them visit us so that we may in a measure reciprocate. Be sure to let us know when you plan a trip our way. We are expecting to see many of you in July either to or from the AMU meeting.

John Q. and Rose Burch.

American Malacological Union-
July 11-14,1956
Lafayette Hotel,2223 El Cajon Blvd., San Diego 12, Calif.

The Conchological Club of Southern California have planned an informal get together on the evening of July 10, the night before the meeting.

Family Epitoniidae

Key to Genera

Two varices present..... *Epitonium*
. Spiral ribs present
.. Basal disk present
... Surface of varices covered by network of crossed spiral lines producing a decussated appearance (*Crisposcala*)
.... Surface of varices not so covered
..... Body whorl very large, spire low... (*Sthenorytis*)
..... Body whorl not large, spire high
...... Basal disk boned by a continuous keel varices simple .... (*Boreoscala*)
...... Basal disk not bounded by a continuous keel but by short triangular posterior enlargements or varices ..... (*Cirsotrema*)
.. Basal disk absent ..... (*Asperiscala*)
. Spiral ribs absent
..Basal disk present ..... (*Gyroscala*)
.. Basal disk absent
... Varices continuous over all whorls..... (*Clathrus*)
... Varices not continuous from whorl to whorl.. (*Nitidiscala*)
Varices absent; (true axial ribs present)
. Outer lip not sharp
.. Axial ribs passing onto the basal disk..... *Acrilla*
... Axial ribs usually not as heavy as spiral ribs; when they are heavy they simulate varices.. (*Ferminoscala*)
... Axial ribs heavier than spiral ribs,not varix like (*Unidiscala*)
.. Axial ribs not passing onto the basal disk... *Opalia*
... Only very fine spiral striations prosent
.... Suture deep and with a sharp angulation just below it,crenulated by upper margin of ill-defined axial ribs..... (*Dentiscala*)
.... Suture moderately deep, without sharp angulation.(*Opalia* s.s.)
... Spiral ribs present
.... Distinct perforations in interspaces between ribs..(*Nodiscala*)
.... Perforations not present
..... Basal keel visible in the suture
...... Axial ribs continuous from sutute to suture.. (*Confusicala*)
...... Axial ribs not continuoys... (*Claviscala*)
.... Basal keel not visible in the suture.. *Rugatiscala*
. Outer lip sharpened, shell heavy ..... *Acirsa*
**** Reference for above key is Durham, in Journal of Paleontology, vol. ii, pp. 483-484

The following key is from the work of the late A.M. Strong

Genus *Epitonium*
Shell with a basal disk bounded by a keel
. Surface with a spongy, punctate outer layer
.. Varices faint over whorls,pointed in the sutures.. *Nodiscala*
.. Varices strong over entire surface of whorls... *Cirsotrema*
. Surface with a thin, chalky outer layer
.. Varices partly obsoleto,surface pitted... *Dentiscala*
. Surface without a distinct outer layer
.. Spiral sculpture distinct
... Shell white
.... Varices terminating at the basal keel.. *Punctiscala*

.... Varices extending to the umbilical region.. Boreoscala
... Shell yellow or brown
.... Sculpture evenly reticulated ... Ferminoscala
.... Occasional ribs strongly varicose .... Pictoscala
.. Spiral sculpture very fine or wanting
... Axial ribs strong and thick.... Opalia
Shell without a basal disk
. Spiral sculpture distinct
.. Varices forming a ridged fold bounding umbilicus.. Crisposcala
.. Varices rounding into umbilical region... Asperoscala
. Spiral sculpture very fine or wanting
.. Shell distinctly banded with brown.... Hirtoscala
.. Shell white
... Shell slender,turrited .... Nitidiscala
... Shell short and broad
.... Varices thin and errect.... Globoscala
.... Varices thick and reflexed... Sthenorytis

Genus Opalia H. & A. Adams,1853 Type (by subsequent designation DeBoury,1886), Opalia australia (Lamarck).

Subgenus Dentiscala DeBoury,1886. Type (by monotypy),Opalia (Dentiscala) crenata (Linnaeus).

9 varices, basal disk with a coarse spiral rib
6 whorls(decollated) 13.5 x 6 mm Gulf of Calif... crenatoides
Cal. Acad. 19-4-47
12 varices, basal disk smooth,convex
7 whorls (decollated) 17 x 7 mm. Monterey to Mexico.. insculpta
12 varices, sharp spiral sculpture present
6 normal whorls 10.5 x 5 mm. Catalina Island
Oldroyd 2-2-53

Opalia (Dentiscala) insculpta (Carpenter),1864
" " crenatoides (Carpenter),1864
" " nesiotica (Dall),1917

Genus Epitonium Roding Type (by subsequent designation, Suter, 1913), Turbo scalaris Linnaeus (plus Scalaria pretiosa Lamarck).

Subgenus Nodiscala De Boury,1890. Type (by original designation) Nodiscala bicarinata (Sowerby)

Subgenus Nodiscala
8 varices
9 whorls 9 x 3 mm. Oregon to Monterey.. spongiosa
Oldroyd 2-2-53
9 varices
7 whorls 1 x 4 mm. Acapulco... mexicana
Proc. USNM 34-250
10 varices, fine axial ribs in interspaces
8 normal whorls 13 x 5.8 mm. Gulf of Calif... golischi
Cal. Acad. 19-4-44
12 varices
9 whorls 10.5 x 3.5 mm. San Juan del Sur.. sanjuanense
Nautilus 45:115

14 varices, entire surface reticulate
7 whorls 7 x 2.5 mm. Catalina to Gulf.Calif. retiporosa
Cal. Acad. 19-4-45
15 varices, 10 to 20 threads
7½ whorls 6 x 2.3 mm. Gulf of Calif... espirita
20 faint varices Mazatlan... mazatlanica
26 faint varices San Clemente tremperi

Epitonium spongiosum (Carpenter,1864 Oregon to Redondo
" retiporosum (Carpenter),1864 Catalina to Gulf of Calif.
" mexicanum (Dall),1908 Gulf of Calif.
" mazatlanicum (Dall),1908 "
" espiritum B. H. & S.,1930 "
" golischi B. H. & S.,1930 "
" sanjuanense Lowe Nicaragua
" ordeanum Lowe "
" tremperi (Bartsch(,1927 San Clemente Island

Subgenus Punctiscala De Boury
Epitonium carpenteri Tapparone-Canefri 1876
8 varices, 6 whorls 4.1 x 1.5 mm. Mazatlan
Epitonium colimanum Hertlein and Strong,1950
10 rather than 8 axial ribs Manzanillo,Mex. in 30 fathoms

Subgenus Pictoscala
18 minor varices. 1 or 2 major
7 whorls 10 x 4.5 mm. Panama... purpuratum
Proc. U.S.N.M., 53:477
Epitonium purpuratum Dall,1917 Panama

Subgenus Acirsa Morch,1857 Type (by monotypy), Scalaria borealis Lyell " outer lip sharpened, shell heavy"

Epitonium boreale (Lyell),1842 Aleutian Islands, Alaska
" boreale ochotense (Middendorff),1849 Arctic,Okhotsk Sea
" exopleura Dall,1917 Cape San Lucas
Faint indications of axial sculpture only 7 whorls 3.6 x 2 mm

Another key to the species of Nodiscala- Ref. p. 3
Basal disk distinct
. Coronating points 8-9
.. Basal disk margined by swellings on the ribs
9 whorls 11 x 4 mm. Acapulco ... mexicana Dall
.. Basal disk marginated by a series of pits
9 whorls 13 x 5.88 mm. Gulf of California golischi B. H. & S.
. Coronating points 14
7 whorls (decollated) 7 x 2.5 mm
Catalina to Gulf of Calif... retiporosa
Basal disk indistinct
. Swollen varices present in addition to axial ribs
.. Axial ribs indistinct over the body of the whorls
7 whorls (decollated) 7.8 x 2.5 mm
San Clemente Island... tremperi Bartsch

Con.

.. Axial ribs strong over the body of the whorls
9 whorls 10.5 x 3.5 mm. San Juan del Sur... sanjuanense Lowe
. Swollen varices absent
.. Axial ribs indistinct over the body of the whorls
... Coronating points 8
9 whorls 9 x 3 mm. Monterey ... spongiosa Carpenter
... Coronating points more than 8
.... Coronating points 14-15
7 whorls (decollated) 6 x 2.3 mm. Gulf Calif. espirata B.H. & S.
.... Coronating points 20
7 whorls 12 x 4 mm. Gulf of Calif. mazatlanica Dall
.. Axial whorls strong over the body of the whorls
9 whorls 7 x 2 mm. San Jan del Sur ... ordenada Lowe

Subgenus Ferminoscala
Epitonium ferminianum Dall,1908 Gulf of Calif. to Panama
" brunneopictum Dall,1908 Cerros Island
" pomphyolayx Dall,1889 Cape San Lucas to Galapagos

Subgenus Sthenorytis Conrad
Epitonium paradisi Hertlein and Strong,1950 Gorda Banks,Gulf Calif.
" turbinum Dall,1908 Galapagos

Subgenus Boreoscala Kobelt,1902 Type Epitonium greenlandicum (Perry)
Epitonium greenlandicum (Perry),1811 Arctic Ocean,to Japan,Alaska

Subgenus Asperiscala De Boury,1909 Type (by original designation)
Scalaria bellastriata Carpenter.

Key to species of Asperiscala
Varicose ribs with a spine or expanded angle at the shoulder
. Varicose ribs 15 to 16
.. Spiral sculpture sharp over entire surface
7 whorls 17.5 x 10 mm Monterey to San Diego.. bellastriatum Carp.
. Varicose ribs 18
.. Spiral striae absent near the suture
8 whorls (decollated) 12.5 x 6 mm. La Paz... pacis Dall
.. Spiral threads irregular, showing faintly on ribs
8 whorls (decollated) 11.9 x 5.5. mm Gulf Calif. kelseyi B.H. & S.
. Varicose ribs 20 to 21
.. Spiral threads very close and fine
5 whorls (decollated) 4.5 x 2.5 mm La Paz... imperforata Dall
. Varicose ribs 26 to 27
.. Spiral threads sharp, close
5 whorls (decollated) 7 x mm Catalina lowei Dall
Varicose ribs without spine or angulation at the shoulder
. Varicose ribs 6
.. Spiral threads at base only
6 whorls (decollated) 8 x 5 mm. Magdalena Bay.. canna Dall
. Varicose ribs 10 to 12
.. Spiral sculpture of fine striae
... Varicose ribs slightly reflected, wider in suture
6 whorls (decollated) 7 x 3 mm. Magdalena Bay.. tinctorum
... Varicose ribs rather low,sharp,errect
8 whorls, 6 x 3 mm. Panama... zeteki Dall
.. Spiral sculpture of raised threads
... Varicose ribs nearly encircling the spire
5 whorls(decollated) 5 x 2.5 mm LaPaz,Acapulco.. acapulcana Dall

... Varicose ribs about half encircling the spire
.... Varicose ribs rather solid,smooth
8 whorls(decollated) 9.5 x 4 mm San Diego to Gulf cookeana Dall
.... Varicose ribs low,thin,sharp
7 whorls(decollated) 5.5 x 3 mm Cape San Lucas.. xantusi Dall
. Varicose ribs 13 to 14
.. Spiral sculpture of fine striae
... Varicose ribs feeble on upper whorls
8 whorls (decollated) 14 x 5.5 mm San Pedro arnoldi Dall
.. Spiral sculpture of strongly incised lines
... Varicose ribs thin, strongly reflected
10 whorls, 4.3 x 2 mm. Taboga Island.. sleveni S. & H.
Varicose ribs without spine or angulation at the shoulder
. Varicose ribs 13 to 14
.. Spiral sculpture of raised threads
... Varicose ribs continuous
8 whorls(decollated) 10 x 4.5 mm Magdalena Bay.. keratia Dall
... Varicose ribs not continous, sharp
4½ whorls(decollated) 3.5 x 1.7 mm. Galapagos.. emydoneda Dall
. Varicose ribs 16
.. Spiral sculpture of fine striae and a peripheral thread
6 whorls(decollated) 7.5 x 3.5 mm/ Laguna Beach.. lagunarum Dall
.. Spiral sculpture of evenly spaced threads
9 whorls 3.7 x 1.4 mm Manzanillo indistinctum Sowerby
. Varicose ribs 19-20
.. Spiral sculpture of uniform, fine threads
6 whorls, 3 x 1.5 mm. Panama Bay.. onchodes Dall

The first 3 on the following list of species not in above key

Epitonium vivesi Hertlein and Strong,1950 Gulf of Calif.
" manzanillense Hertlein & Strong,1950 Manzanillo in 30 fms.
" walkerianum Hertlein and Strong,1950 Nicaragua
" bellastriatum (Carpenter),1864 Monterey to San Diego
" lowei Dall,1906 Catalina
" cookeanum Dall,1917 San Diego to Gulf of Calif.
" lagunarum Dall,1917 Laguna
" arnoldi Dall,1917 San Pedro
" keratium Dall,1917 Magdalena Bay
" tinctorum Dall,1917 "
" cannum Dall,1919 Magdalena Bay to Gulf of Calif.
" xantusi Dall,1917 Cape San Lucas to Tres Marias Ids.
" pacis Dall,1917 La Paz
" imperforatum Dall,1917 La Paz
" acapulcanum Dall,1917 La Paz to Acapulco
" kelseyi B.H. & S. 1930 Gulf of Calif.
" indistinctorum(Sowerby),1844 Gulf of Calif.
" onchodes Dall,1917 Panama
" emydonedum Dall,1917 Galapagos
" sleveni S. & H. Taboga Island
" zeteki Dall Panama

Epitoniidae continued in next issue

Publications Received

Preliminary Revision of the Families Patellidae and Acmaeidae in Australia by J. Hope Macpherson Proc. Roy. Soc. Victoria, Vol.67 Part 2, Nov.1955. pp 229-256, pls. 8 -19 with text ill.

This excellent work has long been needed. The members of these families tend to be confusing in any fauna. The author here clearly describes and figures all of the species. The range as well as the intertidal zonation is mapped for each species. The radular characters are shown in detail. The map of the continent of Australia defining the zones, tropical, warm temperate, cool temperate etc. should be of great interest to a student of all groups.

Briefly, this is a paper that should be studied as a guide by anyone contemplating a revision of any family or genus.

*** We are not certain that copies will be available for general distribution, but will advise if they are obtainable.

*** Have just been advised that we have a limited number of copies available. They may be had from John Q. Burch for $1.50.

Novas Especies Brasileiras Da Familia Strophocheilidae por F. Lange De Morretes Arquivos de Zoologia do Estado De Sao Paulo Vol. VIII, 1955. pp 109-128, 4 pls. 26 new species are described and well figured. It is obvious that this paper represents much careful study and should be in the hands of anyone working with this group.

Moluscos Subfosiles De Los Estanques De Sal De Salinas (Pen. de Santa Elena,Ecuador) Comparacion con la fauna actual del Ecuador. by Robert Hoffstetter. This is paper No.6 of Documentos,Actas y Trabajos Del Primer Latinoamericano de Oceanografia,Biologia Marina y Pesca. Publ. con el concurso de la Unesco, Revista de Biologia Marina vol. V,1952, Valparaiso,Chile. pp 132-203.

This paper is of unusual interest because with few exceptions all of the species discussed are now living on the coast of Ecuador, and a great many of them range northward to the Gulf of California and indeed some of them to California. The nomenclature differs in some particulars from that being used by this writer but this is not stating that the author is not correct. For example *Cymia kiosquiformis* (Duclos), We have been placing this species under *Thais* subgenus *Thaisella*. Another assignment of passing interest is *Crepidula* (*Iancus*) *crepidula* (Linnaeus) var. *plana* Say. It is an interesting contribution.

Studies on the Biology of Limpets 1. The Late J.H. Orton's Work on *Patella.* by A.J. Southward and J.M. Dodd.

II The breeding of *Patella vulgata* L. in Britain by the late J.H. Orton, A.J. Southward, and J.M. Dodd. Journal of the Marine Biological Association of the United Kingdom. Cambridge,1956 pp 145-176, 2 pls. 1 in color, text figs. This is a very thorough and interesting paper.

In the same publication-

Filtering,Feeding, and Digestion in the Lamellibranch *Lasaea rubra* by Dorothy Ballantine and J.E. Morton.

And the biochemists have made some careful studies that are of interest to some. Inasmuch as the writers interest is very largely systematic the papers will merely be mentioned.

Neurohormones of Invertebrates 1. Cardio-regulators of Cyprina and Buccinum by John H. Welsh.

Porphyrin Pigments in the Tectibranch Mollusc *Akera bullata* O.F. Muller by G.Y. Kennedy . Vitamin A & Carotenoids in Certain Inverts/ Mollusca: Loricata,Lamellibranchiata & Gastropoda by L.R. Fisher et al

The Nautilus, Vol.69, No.4,April,1956.
A Gastropod Domiciliary in Sea Urchin Spines by Henry A. Pilsbry.

Cup like nests containing small white gastropods were found on the spines of the sea urchin *Eucidaria tribuloides* (Lam.) from off Palm Beach, Florida. Inasmuch as we have species of *Eucidaris* from this coast here is something else to look for.

Two new species of Clausiliidae from Peru and Bolivia by Dr. Wolfgang Weyrauch.

Two new subspecies of *Neptunea decemcostata* by Arthur Haddleton Clarke, Jr.

A living specimen of the east coast geoduck from St. Augustine, Florida by Malcolm C. Johnson.

** A matter that always interested me in *Panope* rather more than the range in latitude is the potential bathymetric range. We have picked up large numbers of dead valves at times almost filling the dredged in one locality of about 35 fathoms which was a little surprising because we had always thought of them as being estuarine. Of course, it would be almost an impossibility to get a living specimen in a dredge because of the depth beneath the surface of their habitat, in my experience always over two feet. J.Q.B.

Ventridens intertextus eutropis lives here by Margaret C. Teskey.
Land snails from Louisiana by Leslie Hubricht
Haplotrema kendeighi Webb by Leslie Hubricht
Family names in pulmonata by H. Burrington Baker

The Land Mollusca of Fiordland South-West Otago by R.K. Dell, Trans. Royal Soc. of New Zealand,1955 pp 1135-1148 1 pl.

A synopsis of the Nuculanidae with check lists of the Australian Tertiary and Recent species by R.K. Dell- Rec. Dom. Mus. 1955.
A very worthwhile contribution and should be read by all interested in this family from any locality.

A contribution to the study of rates of growth in *Paryphanta busbyi* (Gray)... by R.K. Dell, Rec.Dom.Mus. 1955
The land Mollusca of Nissan Island, Solomon Islands by R.K. Dell Pacific Science,1955, July
A Tornatellinid mollusk from the Solomon Islands,Pac. Sci. 1955 "
The land Mollusca of the Treasury Islands, Solomon Ids. " "
The land Mollusca of Stewart and Solander Islands- Transactions Roy. Soc. of N.Z. June,1954 pp 137-156 1 pl.
Deep-Water Rock Faunas in New Zealand - by R.K. Dell- New Zealand Journ. of Sci. & Tech. 1954

Neue Achitiniden aus Ostafrica (Moll. Gastrop. Stylomn.) by Van Helmur Knipper Veroff.Uberseemus,Bremen,1956.
* The plate in this work is beautiful showing the microscopic sculpture of the shell. Line drawings of the protoconch and the anatomy make it a very thorough work.
Biologische und anatomische Betrachtungen an ostrafrikanischen Ellobiiden (Moll. Gastrop. Basommatophora) by Helmut Knipper and Karl Otto Meyer- Zool Jahr. Jena,1956. ** The author concludes that the Ellobiidae have probably evolved from streptoneurous forms (primitive Cephalispidea). The genus *Melampus* is the most highly developed member of the family. J.Q.B.

The life cycle and some other biological details of the fres-water snail *Physa fontinalis* (L.) by W.F. De Wit. Basteria 1955

Distribution and Ecology of the Marine Invertebrates of Point Barrow, Alaska by G.E. MacGinitie. Smithsonian Misc. Coll. Vol. 128, No.9, Nov.,1955.
This is a very thorough report in 201 pages. An interesting general account of the mollusks taken is given, but it is stated by the author that a more detailed account of this phylum will be published later. Those who have worked to any extent with the northern species will appreciate the authors opening statements " There is so much variation in the Arctic mollusks that identification is often rendered extremely difficult. The complete synonymy for some species would cover several pages." J.QQ.B.

Critical review of biology and control of oyster drills-*Urosalpinx* and *Eupleura* by M.L. Carriker- Spec. Sci. Rept.: Fisheries No.148 1955 150 pages.

Burrowing ability of juvenile clams by John P. Baptist Spec. Sci. Rept.: Fisheries No. 140,1955

Fisheries Newslatter, Australia- In glancing through the current issue, March,1956 I am a bit impressed by the figures for the catch of the season 1954-55- Oyster Lbs. 10,411,998; Scallop 5,406,035; Clam 93,320; Mother of Pearl shell 2,254,204; Trochus shell 2,066,509.

Outdoor California , publication of the Calif. Dept. of Fish and Game, for May,1956. A well illustrated article entitled " Oysters-booming industry has potential greater than in " good old days".
It seems that oyster farming has become a booming industry in the California bays. This obvious from the amount of seed used- 1953-54 2,234 cases; 1954-55 10,800 cases; Nov. 1955 to March 1956 26,581 cases.

Indo-Pacific Sea Shells by Sally Diana Kaicher. This is a series of bulletins each containing 6 plates illustrating a number of species. The plates are clear making identification not difficult. They sell for $1 each and may be had from John Q. Burch.

1. Tonnacea including Cassididae,Cymatiidae,Bursidae, and Tonnidae.
2. Naticacea-Cypraeacea including Naticidae,Eratoidae,Ovulidae, and Cypraeidae.

*** The author states that they are " A guide to the common marine snails from East Africa to Polynesia". I am reminded of a comment made by Dr. Barnard in the preface to his South African book,in itself a much more pretentious work,to the effect that " If you expect to classify all of the shells you get from South Africa with this little book, you are going to be dissapointed." This was a very modest statement but I liked that.
But in any event these booklets are a distinct help on a fauna not covered at this time by anything in print. There are, of course, a few very controversial questions of systematics involved, but you may be assured that this would be true rgardless of the author.

Crabs,Starfish,Snails prove big eaters " Los Angeles Times,April 22 " Gunnar Thorson of the University of Copenhagen told an~~d~~ international meeting of marine scientists. They eat 20 to 30% of their own weight in food daily during their growing period. A 90 lb. boy would have to eat 18 to 27 lbs. a day to match that."

MINUTES OF THE CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA
June 5, 1956

The regular meeting of the Conchological Club of Southern California was called to order. Tuesday evening, June 5th, by our president, Mr. John Fitch. 23 members, and one guest, Mrs. McMillen were given a warm welcome.

The minutes were approved as corrected. The Treasurer, Mrs. Donald Brooks, reported 56 active members, and that our annual dues to the A.M.U. have been paid.

A letter from the secretary of the A.M.U.P.D., Ruth Coates, informed our club that a room had been tentatively reserved at the LaFayette Hotel where we may hold our reception prior to the beginning of the convention. A motion was made by Crawford Cate and Rose Burch, unanimously passed tp accept these arrangements.

Mrs. Rose Burch reminded us that there are some excellent tides early in the morning when shell collectors may find speci--mens not usually found in the day time. Our president promised to come with more detailed information on such an excursion at the next meeting. In the meantime, we are urged not to forget the Fossil Fiel Trip to be led by Mr. Kanakoff of the Los Amgeles Museum this summer. Exact time and place to be announced later.

The following important papers were brought to our attention.

1. Research Brief published by the Fish Commission of Oregon covering piddocks and mussels.
2. Revision of the family Acmaeidae and Patellidae by Miss MacPherson, the Royal Society of Victoria, Australia
3. Survival Training Guide issued Nov. 1955 by the Chief of Naval Operations, Aviation Training Division, U.S. Navy.

After our usual mid-meeting break, Mr. Donald Wilson spoke on the " Quantitative Survey of the Benthos of Mollusca, Sam Pedro Basin, Southern California". Under the auspices of the Hancock Foundation, bottom samples, or grabs, were taken in this 1,000 sq. mi. area at the intersection of every 2nd sq. mile to gain some idea of the density of Mollusca, the type of bottom, the the depth and correlation, if any. Of course, the results of such a vast undertaking are still in a preliminary stage. But the report of some of the conditions encountered, especially at greatde depths, the pictures and the description of the methods used as well as the actual samples of some of the material found, was most interesting.

The meeting was adjourned,

Respectfully submitted,

Miss Florence Thurlow, Secretary

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor,- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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The Genus in Molluscan Systematics by John Q. Burch

Are we not describing or establishing a multitude of genera based on no more than specific characters ?

The logical proceedure in assembling a large dealers stock or a large institutionalcollection would seem to be to segregate all specimens with similar shell characters. When this is done it is very confusing to discover a tray of specimens all so close that they require careful study to determine the species, but with a variety of generic names. It is easily understood that a writer in America,Australia,Japan or elsewhere may find it a systematic convenience to describe a distinct genus to contain a species or so from his own fauna. Such writers always assume that there can be nothing else in all the seas of the earth even remotely resembling his species. It has been facetously said that we will soon have every species in a genus of its own simplifying the nomenclature by entirely eliminating the necessity for such a taxa as species.

Any family key will automatically group these generic names

together. The problem is then to determine whether or not they are indeed generically distinct with the amazing result at times that one will find several genera described on the same characters. Some offer some very questionable anatomical data. It is well known that the radula and some other parts will vary remarkably in the same species from different colonies or even different individuals, and indeed in different seasons of the year.

If we are dealing with specimens from one fauna it seems easier to accept the systematics of the writers of that province, but when a large number of specimens are received from islands having no current literature the matter becomes annoying to say the least.

This has been brought to our attention recently because of the arrival of several large shipments involving many thousands of specimens. The simplest thing is to use the genera of Reeve, Sowerby, et al., in which case we find specimens in the same cabinet drawer grouped with others almost identical bearing a series of different generic assignments. At least for this comment we are assuming that they are all specifically distinct.

* * *

A.M.U.

We expect to meet most of our shell collecting friends in San Diego Julu 11-14 at the Lafayette Hotel,2223 El Cajon Blvd.,

* * *

Eupleura grippi Dall,1911 Type locality, San Diego, Calif. in 15 fathoms.

This species has been something of a mystery with some questioning the validity of the locality or species.

It was my privilege to examine the type in the U.S. National Museum in April. At the time I was fortunate in having with me several of our well known careful workers Mackenzie Gordon, Dwight Taylor and our host Dr. Harald Rehder.

The unanimous opinion was that *Eupleura grippi* Dall is:

1. *Eupleura*- properly assigned to the genus.
2. A distinct species differing from any other species of *Eupleura* known from this coast.
3. It is a Recent specimen, apparently taken alive and not worn.

Conclusion:- *Eupleura grippi* Dall is a California species but must be extremely rare. Shallow dredgings off San Diego should be carefully studied for it. J.Q.B.

Family Epitoniidae (con.)

Denus *Epitonium*

Subgenus *Nitidiscala* De Boury,1909. Type (by original designation) *Scalaria unifasciata* Sowerby.

Keys
Alaska to San Diego

Nitidiscala
Varicose ribs with a spine or expanded angle at the shoulder
. Varicose ribs 10 to 12
.. Shell white, with a brown band in suture
8 normal whorls 12 x 5.5 mm. Monterey to San Diego.. *tincta*
.. Shell uniformly white
... Varicose ribs continuous over the very deep sutures
8 normal whorls 20 x 8 mm. Monterey to San Diego.. *cooperi* Strong
... Varicose ribs sharp,not continuous over the sutures
6 normal whorls 6.5 x 3 mm, San Diego *orcuttiana* Dall
. Varicose ribs 13 to 14
.. Varicose ribs broadly reflected over the body of the whorl
... Varicose ribs flattened in sutures
7 normal whorls 12 x 4.5 mm, Catalina Island... *catalinae* Dall
... Varicose ribs continuous over the sutures
6 whorls (decollated) 9.5 x 5 mm. Puget Sound... *caamanoi* Dall
.. Varicose ribs sharp, only slightly reflected
... Varicose ribs narrowly aculeated at the shoulder
11 whorls 35 x 12 mm. Alaska to Puget Sound,.. *indianorum* Carp.
... Varicose ribs expanded into a small lamella at the shoulder
9 normal whorls 20 x 6.5 mm, Monterey to San Diego..*acrostephana*
. Varicose ribs 15 to 16
.. Varicose ribs regularly continuous up the spire
10 whorls 17.5 x 4.5 mm, Monterey,.. *crebricostata*
.. Varicose ribs concave at the suture, flattened on the base
12 normal whorls 18 x 7.5 mm. San Pedro to Coronado Id...*tabulatum*
. Varicose ribs more than 16
.. Varicose ribs low, sharp,spinose at the shoulder
10.5 x 4 mm. Vancouver to Lower Calif.... *sawinae* Dall
.. Varicose ribs sharply angulated at the shoulder
7 normal whorls 9 x 4 mm. Pt. Reyes to San Diego... *rega* Dall
Varicose ribs rounding over the shoulder without spine or angulation
. Varicose ribs 9 to 11
5 whorls (decollated) 11.5 x 6 mm. San Diego ... *zephryrina* Dall
.. Varicose ribs solid, thick, not continuous
6 whorls (decollated) 17 x 7.5 mm Puget Siund.. *denisclathrata* Dall
.. Varicose ribs with anterior face flattish, smooth
6 normal whorls 19 x 6.5 mm San Diego... *barbarina* Dall
.. Varicose ribs narrow, rounded, slightly flattened in suture
5 normal whorls 15.5 x 6 mm, San Diego ... *prestura* Dall
. Varicose ribs 14
.. Varicose ribs low, flattly reflected on base
6 whorls (decollated) 5.0 x 2.5 mm. Monterey.. *regiomontanum* Dall
Varicose ribs without spine or marked angulation
. Varicose ribs 5 to 6
.. Ribs very broadly reflected
7 whorls 19 x 9 mm, Gulf of Fonseca ... *strongianum* Lowe
.. Ribs strong, wing like
6 whorls 12.5 x mm Gulf of Nicoya... *dianae* Hinds

(con.)

. Varicose ribs 7 to 8
.. Upper whorls flesh color, lower white
8 whorls 8 x 4 mm. Magdalena Bay... phanium Dall
.. Shell uniformly white
9 whorls 4.5 x 2.2 mm. Bahia Honda, Panama... gissleri S.& H.
. Varicose ribs 9 to 11
.. Base marginated by a strong cord
7 whorls (decollated) 15 x 7 mm Panama... basicum Dall
.. Base not marginated
... Upper whorls lilac, last whorl white
9 whorls (decollated) 9 x 6 mm Magdalena Bay.. callipheplum Dall
... All whorls white
.... Ribs not continuous to the spire
7 whorls 3 x 1.5 mm. Panama .... tabogensis Dall
.... Ribs continuous up the spire
..... Ribs sharp, pitting the suture
6 whorls, 9 x 5 mm. Gulf of Calif. .. colpoicum Dall
..... Ribs low, rounded
10 whorls, 9 x 3.5 mm. Panama... cumingi Carpenter
. Varicose ribs 12 to 14
.. Shell stout, broadly conic
7 whorls 11 x 6 mm. Mazatlan ... suprastriatum Carp.
.. Shell slender, elongate conic
... Ribs not continuous, low, thread like
5 whorls (decollated)4 x 1.5 mm. La Paz.. cylindricum Dall
... Ribs continuous
.... Ribs low, closely appressed to the whorls
9 whorls 14 x 4.5 mm. Acapulco .. appressicostatum Dall
.... Ribs stout, smooth
9 whorls 28.5 x 9.5 mm. Montijo Bay.. gaylordianum Lowe
. Varicose ribs 16
.. Whorls well rounded
... Ribs low, rather thick
5 whorls (decollated) 7.5 x 4 mm. Galapagos... habeli Dall
... Ribs broad,curved
7.5 whorls (decollated) 15.9 x mm. Ecuador... strongi Bartsch
. Varicose ribs 18 to 22
.. Ribs strongly curved
... 6 whorls (imperfect) 2.3 x 1.5 mm. Panama... imbrex Dall
.. Ribs not strongly curved
9 whorls 3.2 x 1.6 mm. Corrientes,Mex.... willetti S. & H.
. Varicose ribs 18 to 19
.. Varicose ribs low, rounded, interspaces striated
9 whorls (decollated) 21 x 7.5 mm Oregon to Lower Calif.
columbiana Dall
. Varicose ribs 20 to 21
.. Varicose ribs narrow, erect
6 whorls 3.25 x 1.6 mm. Monterey... rectilaminata Dall
.. Varicose ribs smooth, strongly reflected
6 whorls 3.5 x 1.75 mm. Monterey ... berryi Dall

Varicose ribs with a spine or expanded angle at the shoulder
. Varicose ribs 6
.. Varicose ribs sometimes spined, finely striated
10 normal whorls, 21 x 9.5 mm. Gulf of Calif... prehexagonum Dall
.. Varicose ribs strongly angulated, smooth
14 x 6 mm. Calif. to Panama.. hexagonum Sowerby
. Varicose ribs 7 to 8
.. White with a flesh colored peripheral band
8 whorls 15 x 10 mm. La Paz to West Mexico... bialatum Dall

.. Uniformly white
... Shell slender, angulation not prominent
8 whorls, 11 x 4 mm. Gulf of Calif.... eutaenium Dall
... Shell stout
.... Ribs erect
..... Ribs flattened on the base
7 whorls 4 x 2 mm. Lower Calif. to Panama .. apiculatum Dall
..... Ribs not flattened on the base
...... Ribs continuous up the spire
9 whorls 7.2 x 4.4 mm. Bahia Honda, Panama .. wurtsbaughi S. & H.
...... Ribs alternating in the suture
10 whorls 26 x 10 mm. Panama... hindsii Carpenter
. Varicose Ribs 9 to 10
.. Ribs spined
... Spine half way between the suture and periphery
8 whorls 4.5 x 2 mm. Gulf of Calif... centronium Dall
... Spine at the shoulder
.... Shell narrowly umbilicated
10 whorls 8.75 x mm. Central America... obtusum Sowerby
.... Shell not umbilicated
..... Ribs erect
7 whorls (decollated) 20 x 9 mm. La Paz.. pazianum Dall
..... Ribs reflected
7 whorls 10.5 x 4 mm. Santa Barbara Ids. to Gulf..californicum
.. Ribs angulated, not spined
10 whorls 8.75 x mm. Central America ... aciculatum Hinds
. Varicose ribs 11 to 12
.. Shell angulated at base
5 whorls (decollated) 2.75 x 1.75 mm. Panama.. columnellum Dall
.. Shell not angulated at the base
5 whorls (decollated) 5 x 2 mm. San Diego to Panama..diegensis
. Varicose ribs 13 to 14
.. Ribs low, spined on the early whorls
8 whorls, spined on the early whorls 12 x 6.6 mm. Pt. Abrejos
roberti Dall
.. Ribs sharp, a blunt angle at the suture
7 whorls 4 x 2.5 mm. Pt. Abrejos to Gulf.. compradorum Dall

The first two species on the list below are not in the above keys.

Epitonium oerstedianum Hertlein and Strong,1951 Gulf of Calif.
" durhamianum " " " " Nicaragua
" indianorum (Carpenter) 1864 Forrester Id. to Puget Sound
" hexagonum (Sowerby),1844 Santa Cruz to Panama
" cooperi Strong.1930 San Francisco to Gulf of Calif.
" tinctum (Carpenter),1864 Monterey to Gulf of Calif.
" crebricostatum (Carpenter),1864 Vancouver to Gulf of Calif
" diegensis (Dall),1917 San Diego to La Paz
" californicum (Dall),1917 San Miguel Id. to Gulf
" musidorum (Dall),1917 San Diego to Panama
" caamanoi (Dall and Bartsch),1910 Puget Sound to San Diego
" persuturum (Dall),1917 San Diego
" densiclathratum (Dall),1917 Puget Sound to San Diego
" rectilaminatum (Dall),1907 Monterey to Gulf of Calif.
" regiomontanum (Dall),1917 Monterey
" sawinae (Dall),1903 Vancouver to Lower Calif.
" berryi (Dall),1907 Monterey to San Diego
" inconspicuum (Sowerby),1847 San Diego south
" columbianum (Dall),1917 Forrester Id. to Gulf of Calif.
" pedroanum Willett,1932 San Pedro (Con.)

Epitonium *callipeplum* (Dall),1919 Magdalena Bay
" *phanium* (Dall),1919 Magdalena Bay- Montijo Bay
" *apiculatum* (Dall),1917 Lower Calif. to Panama
" *cylindricum* (Dall),1917 La Paz
" *basicum* (Dall),1917 Gulf of Calif. to Peru
" *compodorum* (Dall),1917 Gulf of Calif.
" *colpoicum* (Dall),1917 Gulf of Calif.-Montijo Bay
" *pazianum* (Dall),1917 La Paz to Acapulco
" *bialatum* (Dall),1917 Gulf of Calif. to Panama
" *prehexagonum* (Dall),1917 Gulf of Calif.
" *roberti* (Dall),1917 Gulf of Calif. to Central America
" *eutaenium* (Dall),1917 Gulf of Calif.
" *centronium* (Dall),1917 Gulf of Calif.
" *willetti* Strong & Hertlein off Mazatlan
" *strongianum* Lowe San Salvador
" *regularis* (Carpenter),1866 Acapulco to Panama
" *appressicostatum* (Dall),1917 Acapulco
" *cuningi* (Carpenter),1856 Panama
" *hindsii* (Carpenter),1856 "
" *obtusum* (Sowerby),1844 "
" *columnellum* (Dall),1917 "
" *imbrex* (Dall),1917 "
" *phylax* (Dall),1917 "
" *zeteki* (Dall),1917 "
" *gaylordianum* Lowe "
" *habeli* Dall,1917 Galapagos
" *rhytidum* (Dall),1917 "
" *strongi* Bartsch,1928 Ecuador
" *reedi* Bartsch,1928 "

The following species are listed without key
Subgenus *Cirsotrema* Morch
Epitonium (*Cirsotrema*) *togatum* Hertlein and Strong,1951 Gulf of Cal

Subgenus *Crisposcala* De Boury,1886 (Type (By original designation)
Scalaria *crispa* (Lamarck)
Epitonium *catalinae* (Dall),1908 Forrester Id. to San Diego
" *regum* Dall,1917 Point Reyes to San Diego
" *acrostephanus* (Dall),1908 Puget Sound
" *tabulatum* Dall,1917 Monterey to Coronado Islands

Subgenus *Globiscala* De Boury,1909 Type (by original designation)
Scalaria *bullata* Sowerby.
Epitonium *orcuttianum* Dall,1917 San Diego, Calif.
" *barbarinum* Dall,1919 San Diego to Panama
" *zephyrium* Dall,1917 San Diego

MINUTES 160
AUG. 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum,Exposition Park,Los Angeles,Calif. All interested persons are cordially invited.

Please mail all news to your editor,- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
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TAXONOMIC CHARACTERS IN MOLLUSCA By John Q. Burch

Criticism of old authorities or senior associates is a well known and common practice of those who seem to feel the need of bolstering their own importance by tearing down others. Please be assured that if these comments may at times seem super critical it is not from lack of appreciation of the attempts made to contribute to the science of conchology.

A mere bibliography of works dealing with taxonomy would fill a large number of volumes. Obviously there has been a great difference of opinion.

The basic purpose of all systematics must be the identification of the animals involved, and it would seem logical not to make the system unnecessarily complex.

Consideration of a systematic structure to contain the species of one province involves no great problem when compared to that of a large world wide collection, not to even mention the host of variations in the fossil.

Occasionally a student will confine his work to the fauna of one locality refusing to examine or consider specimens from any other province. While it is true that this is no doubt the day

of the specialist, the fact remains that such a worker will necessarily be so much a victim of his bias that anything he may publish is almost certain to be nonsense. His systematic divisions will certainly have related groups not only throughout the earth in space, but vertically in time.

A very fine new book has been published this year on the Cypraeidae. The author has given us a genuine contribution. The compilation and discussion of species will make it indispensible to the worker in this group. However, the author has followed the current trend in this field. The Genus Cypraea Linne,1758 is now composed of 13 thirteen subfamilies, and 52 fifty two genera.

The following is suggested for consideration before the entire systematic structure for conchology becomes too nebulous for any to navigate.

It is here proposed:

1. Genus- should be broad and based on characters of constant and wide occurence. It is assumed that these will be easily accessible external morphological characters. When there may be an anatomical distinction, this should be accepted as the single exception to the rule.

2. Subgenus- should be based on diagnostic characters of limited occurence.

3. Species- should be based on heritable characters not affected by environment.

4. Subspecies- should be based on characters resulting from environment.

5. Form- should include all variations within a species from one province.

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PAPER by J.Q.B.

The lasting quality of papers on which scientific articles are printed is often a matter of discussion.

In a large shipment of perhaps a ton of papers recently received some interesting comparisons were noted. This lot contained papers from more than a century back to date. All were kept on the same shelving in the same library.

Many of the older pulp papers crumble at a touch, and, sad to discover, among these are a number of basic periodicals of both this hemisphere and the old. Of course, the finest were the heavy old rag papers, next to these in lasting quality were the white bonds similar to the paper on which this is being mimeographed.

In considering the disadvantages of mimeograph printing it would seem that the quality of ink used on some of the old papers is more important than the paper because some of them were definitely faded.

This comment is not intended to infer that mimeograph printing is desirable if type is financially possible, but to definitely state that this sheet on which this is printed will outlast a good 50% of all papers coming into our establishment.

To set up type and then print on cheap pulp wpuld seem to be a very false economy.

****

Kiener- There was a brief discussion between papers about the correct pronunciation of this name. Apparently none of us were linguists. Anyway a day or so ago I thought of it and asked one of our language scholars and was given the following information. Kiener is presumably a German name and the rule is ie pronounce the e , ei pronounce the i. Therefore the proper pronunciation is as keener.

****

The many friends of Mr. Paul P. McGinty will be saddened to learn of his passing at his Ocean Ridge home, near Palm Beach,Florida, on July 1. He reached an age of nearly 79 with an interest in conchology undimished by the passing years. He will be particularly missed by the many shell collectors who often dropped in to visit him during their winter journeys through Florida, and thus came to know him and his gracious hospitality and kindley nature.

****

Mr. T. Pain, 16 Landseer Buildings,Millbank,London, S.W. 1,England. " In your Minutes 152, p.2-3, you refer to Perry's genera. I have in part in the next No. of our Journ. of Conch. (now in press) tried to establish once and for all that Perry's name Pomacea (Arcana Sig. G.S. pl.12, March 1,1810) has priority over Ampullarius de Montfort (after March,1810) and covers all American Ampullaridae. Perry's figure is a very good one indeed and represents the shell we know as Ampullaria gigas Spix 1827. Pomacea maculata Perry therefore becomes the type of the genus. Pomacea 1810 being monotypic for P. maculata. Sowerby's suggestion that Perry's genera were too vaguely defined certainly does not apply in this case. He may be correct in the case of Hexaplex but to condemn all of Perry's genera on the grounds that Sowerby and others saw fit to do so is, in my opinion wrong. Perry's fine figure of the type of Pomacea alone makes it necessary to recognize his right to have his name used for the S. Am. apple snails. Drs. Pilsbry and Bequaert are both in complete agreement with me in respect to the use of the name Pomacea."

*** Note by J.Q.B. - I agree that merely because I considered Perry's genera of the Muricidae chaotic,this did not warrant a question of all of Perry's genera. His figures are fine,but when he gives a two line description and figures eight entirely different species obviously of different groups the matter again becomes a bit dim to my eye.

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Publications Received

Upper Pleistocene Mollusca From Potrero Canyon,Pacific Palisades, California by James W. Valentine- Trans. San Diego Soc. Nat. Hist., Vol. XII, No. 10, pp 181-205, 1 map, 1 plate,July2,1956.

This paper has been carefully prepared. There are several matters of rather unusual interest. The author figures Hanetia elegans (Dall). This species has been the cause of numerous discussions and questions. Sulcoretusa xystrum (Dall) is figured and is one of a number of species found by the author in this deposit that have been considered extremely scarce either Recent or in other fossil deposits. The paper represents a great deal of serious study and work.

A New Species of Amnicolid Snail from Chihuahua,Mexico by Robert J. Drake. Bulletin So. Calif. Acad. Sci., Jan.-April,1956.

Lyrodes hertleini n. sp. is well figured and described.

Read at the meeting of the American Malacological Union, July, 1956

Some Problems in the West Coast Naticidae by John Q. Burch

The concept of what defines a genus has no doubt been a controversial matter from Linnaeus to date. While I am entirely in accord with the present trend toward the separation of clearly distinct groups into different genera, there is also the probability that we are describing many genera on grounds no more than specific.

We are dealing with living organisms that refuse at times to fall into place as numbers on an adding machine.

The student with a dozen specimens may erect a reasonable system for them. The acquisition of a thousand specimens will not simplify his work but make it vastly more difficult.

It is doubtful if shells of even the same species from different colonies are ever exactly identical.

The host of fossil species and genera with their multitudinous variations must also be considered as an integral part of our systematic structure.

It is obvious that the first thing to agree upon in the study of any group of animals is what character or characters are we going to use for differentiation.

The description of a species based upon a single character may be sound, whereas the establishment of a higher subdivision upon this character may if carried to conclusion arrive at a very revolutionary grouping.

To describe a genus based upon one character, another upon another character, and then describe a species with both characters may at times approach absurdity.

Opercular characters have been extensively used as a basis of subdivision in the Naticidae. The value in specific description is not considered here, but if used for larger groups the countless gradations would indicate the ultimate placing of many under _Natica_ s.s. The attempt to key out the family by the use of opercula

has led me, at least, to confusion.

This assumes importance in the consideration of the generic name under which to place the species clausa and others. Tectonatica Sacco, 1890 Type (by monotypy), Natica tectula Bonelli Pliocene of Italy or Cryptonatica Dall, 1892 Type (by subsequent designation, Dall, 1909) Natica clausa Broderip and Sowerby.

Sacco stated that Tectonatica included clausa. Cossmann stated that Cryptonatica is a synonym of Tectonatica. This view was accepted by Dr. W. P. Woodring in his great work on the Miocene of Jamaica, 1928, followed by Grant and Gale, 1931 and a great many others.

However, Dr. Woodring in later work in the Professional Papers of the U. S. Geological Survey returned to Cryptonatica, and it is safe to state that the great majority of workers on this coast at least are now using Cryptonatica.

Apparently no one has seen an actual specimen of Sacco's species, and we wish to thank Professor Roberto Malorda of the Instituto Di Geologia of Torino for sending one of the shells actually studied by Sacco. This specimen is here for your observation - Natica tectula Sacco. Please note that this specimen as well as all others under consideration have the umbilicus completely filled with callus and agree in other shell characters.

Reference should be made here to the comments made above regarding opercular characters. The issue may be clear because Dr. Dall stated of Cryptonatica "The rhachidian tooth, like that of Bulbus has a single cusp, which establishes the subgenus founded on opercular characters."

The operculum of Natica tectula Sacco is not known.

It is my conclusion that Natica tectula Sacco is congeneric with clausa; that the group is clearly defined and sufficiently distinct from Natica s.s. to be given full generic value.

Natica russa Gould, 1859 is another problem in our faunal list. The type is

either lost or misplaced. It is not in the U. S. National Museum, nor in any of the known large institutions. For a time a specimen was in error thought to be the type, but proved to be a specimen merely named by Simpson or some other later worker.

Gould's types that were in Albany have been sent to Dr. Clench at Harvard and those extant will be figured and published. The type of N. russa is apparently not present.

However, the description of russa and the locality Arctic Ocean would indicate a specimen of clausa with nothing in Gould's description to separate it from that species.

It was thought by many that russa and aleutica were the same. However, the large form aleutica Dall is not known to range to the Arctic. In any event the conservative would certainly place aleutica as a subspecies of clausa. Tectonatica clausa is one of the most abundant of all Arctic species, and the great variation in almost all species of that fauna is well known.

It is my conclusion to place the species russa Gould in the synonymy of clausa unless the rediscovery of the type should prove otherwise.

Tectonatica janthostoma (Deshayes) and Tectonatica janthostomoides Kuroda and Habe. Specimens of both species are here for the consideration of those interested. The species janthostomoides is separated on the basis that it has a line around the operculum, whereas janthostoma does not.

Eunaticina Fischer, 1885. Substitute name for Naticina Gray, 1847 not Naticina Guilding, 1834. Type (by original designation), Natica papilla Gmelin.

It has been often stated that the species Eunaticina oldroydii Dall of the Pacific Coast belongs to another genus.

Specimens of the type species papilla are available for comparison with oldroydii.

It is my opinion that the assignment to Eunaticina by Dall was sound and

should stand.

Genus *Natica* Scopoli, 1777 Type (by subsequent designation, Harris, 1897) *Nerita vitellus* L. *Natica* s.s. has a very low funicle, the rib spiraling up the umbilicus. This character is frequently mentioned, and is no doubt important in specific description. However, a study of the funicle in this group indicates gradations from none to the very broad and heavy in different species.

This is illustrated by a series of specimens here for the observation of those interested. The type species *vitellus* on the left followed by *Natica spadicea* Gmelin, a closely related species about which perhaps more has been written than about *vitellus*.

It is my opinion that a large number of the subdivisions of *Natica* proposed by various authors should be discarded and the species recognized under *Natica*, s.s.

In conclusion, I am very grateful to Mr. Walter Eyerdam for having sent his entire large collection of *Natica* to me for study, and I am indebted to others for having made vast numbers of specimens available to me, Dr. Clench of Harvard University, Dr. Emerson of the American Museum, Dr. Abbott of the Academy of Natural Sciences of Philadelphia, and Drs. Rehder and Morrison of the United States National Museum.

A.M.U. Twenty-Second Annual Meeting, San Diego,Calif. July 11-14

The meeting of the American Malacological Union in San Diego in July may boast of having been not only the largest meeting on redord, but one of the pleasantest. The Lafeyye Hotel was cool and comfortable, and I know that we all enjoyed the meetings in the spacious lobby as well as the talk over the tables at meals. At many conventions certain small groups tend to stay together, eat together and more or less confine their attention to each other. This one was certainly not that way. Perhaps we even tried to have different companions and this must have added to the pleasure of the meeting.

There were, I think, 115 registered, but there must have been not less than 150 in attendance at least part of the time.

Mr. Allyn Smith was an excellent presiding officer keeping the meetings in order but in a happy and humorous manner.

The many fine papers will be reported in the annual of the A.M.U. and need no review here. The eastern U.S. was well represented.

The Conchological Club of Southern California were hosts at an informal reception July 10, the evening before the registration the morning of the 11th. This was well attended and it is always nice to meet persons socially whom you consider old friends but by correspondence.

In the course of the meeting there were a number of interesting papers, color slides of rare shells etc. that are not in the official printed program. The titles of some of the papers given follow.

Dr. Katherine V.W. Palmer- Philip P. Carpenter,his life and work in Pacific Coast conchology.
Dr. Myra Keen- Nomenclatural problems in the Archaegastropoda.
Dr. Leo G. Hertlein- Lewis W. Sloat, pioneer conchologist in Calif.
Dr. Wm. K. Emerson- Pleistocene invertebrates fr Puerto Penasco,Mex.
Mr. John Q. Burch- Some problems with the West Coast naticidae.
Dr. Henry van der Schalie- Human blood fluke control in Egypt.
Dr. Joshua L. Baily Jr.- The law of the neighborhood
Bruce W. Halstead, M.D.- Venemous mollusks
Ariel A. Roth & Edward D. Wagner- Anatomy of the reproductive system of *Oncomelania nosophora*, an intermediate host of *Schistosoma* jap.
Lois Wong Chi,Edw. D. Wagner & Dale Inaba- St. reproduction and crossing of var. species of *Oncomelania* ...
Crawford N. Cate- An introduction to the shells of West Africa.
Dr. Joseph P.E. Morrison- Notes on American Rangia
Ray Summers- Cowry shells in kodachrome
Morris K. Jacobson- Malacological opportunities in Cuba
Robert R. Talmadge- Status of the Linnean abalone, *Haliotis varia*.
Dr. Edith Krugelis-McRae & Dr. Rudolf Stoler- A study of the porphyrin flourescence in molluscan shells.
George P. Kanakoff- Some new paleontological records in So. Calif.
Andrew Sorensen- West Coast oysters, their culture and enemies
John E. Fitch- The effect of White's Pt.,sewer outfall on marine life.
Paul H. Steel- *Cypraea caput-draconis* & other shells of Easter Island.
Henry van der Schalie- Studies on *Pomatiopsis* shells in Michigan.
Grace P. Johnson- Plan for a collector's guide to the marine.. of the Panamic province.
Dr. Albert Mead- A prognosis in the molluscan control program.
Dr. Arthur D. Howard- Pteropods from the Albatross
Mr. Robert H. Parker- Mollusks from the Gulf of Mexico
Miss Frances Cramer- An interesting lecture to accompany a very fine and extensive motion picture of marine life on the west cost of Mexico.

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MINUTES OF THE CONCHOLOGICAL SOCIETY OF SOUTHERN CALIFORNIA

August 7, 1956

The regular meeting of the Conchological Club of Southern California was called to order Tuesday evening, August 7th at 7:30 P.M. by the Secretary, Florence Thurlow. As Mr. John Fitch, our President was ill and the Vice President, Dr. Mattox was in the East on vacation, Mrs. Rose Burch was appointed to preside at the meeting.

Greetings were extended to 35 people attending the meeting and 8 guests were introduced by Mrs. Burch.

The minutes were approved as read. Mrs. Donald Brooks, Treasurer announced 57 active members and $21.00 in the treasury.

Mrs. Rose Burch reported briefly on the A.M.U. Convention. It was gratifying to know that the reception given by the Pacific Shell Club on the evening preceeding registration was attended by more than 70 people. Refreshments of punch and cake which were furnished for us by the Lafayette Hotel were served by Mrs. Crawford Cate and Mrs. Harry Turver. Official pictures of the Convention Group are still available for $1.62. Please order through University Pictures, 3314 Midway Drive, San Diego 10, California.

Concerning recent interesting publications, Mrs. Burch announced "A Diagnosis of New Eastern Pacific Chitons" by Dr. Stillman Berry. Dr. W. O. Gregg reports that the July Nautlis gives changes in the nomenclature affecting some of our local land snails. Prospectus on the new book, "Cowry Shells of the World Seas" by Joyce Allan, were given out to any who wished them, together with other pamphlets on fossils.

Communications from several of our members indicates they are spending summer vacations collecting in far-away places. Dorothy Brown and family are traveling by boat down the West Coast of Mexico; Mr. and Mrs. Carter have spent 6 months motoring through Mexico, The Gulf States and Florida; Mrs. Gillis wrote sending greetings and a poem . which was read at the meeting. It is also good to know that Dr. Arthur Howard is up and about after his recent illness.

Mrs. Jean Wilkens, president of the Long Beach Shell Club, extended an invitation to attend the next regular meeting of that group to be held at her home, 8140 E. Phlox St., Downey, Sunday August 12th, Mrs. Rose Burch is to be the guest speaker. There will be a "covered dish" Pot Luck dinner and an auction of shells, all of which should add up to a lot of fun.

Following our usual mid-meeting break, Mr. Crawford Cate showed colored slides of many of the visitors attending the Convention. This was supplimented by numerous snap-shots taken by Mrs. Jean Cate and mounted so they could be easily passed around for all to see. There being no further business, the meeting was then adjourned.

Respectfully submitted,

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at the Los Angeles Museum, Exposition Park, Los Angeles, Calif. at 7:30 P.M. All interested persons are cordially invited.

Please mail all news to your editor:- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Phone Ax 3-5710
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HORSEBACK OPINIONS

More years ago than I care to count, while studying law in the university, a very elderly retired judge spoke to our class. He told us that in the early days of his life it was customary for the lawyers to ride horseback from distant towns to attend court. When such a lawyer was asked a legal opinion and he answered still mounted without research, they were called " horseback opinions". We were warned to avoid making them, but I fear that most of us whether lawyers, conchologists or what not, are guilty of giving many. Nothing can be more dangerous than giving a " horseback opinion" on a specimen shell. The following is an excellent example.

Personal communication from Dr. W.P. Woodring:
Dear Mr. Burch: " I recently had occasion to review the fossil and living species of *Eupleura*. As a result of this review I am obliged to disagree with your note on *Eupleura grippi* on page 6 of Minutes 159. *Eupleura grippi* is not a~~n~~ *Eurpleura*; it is not a muricid, it evidently is a thaisid. The operculum is in place, far within the

aperture. It should be a simple matter to determine whether this species is a thaidid by digging out the operculum and examining the inner face. Though I have no further interest in the matter, I suggest that the type is an immature, exceptional specimen of some well known thaidid species, probably Thais lamelloda. Any species that is represented only by the type after many years of collecting in the type region is to be regarded with suspicion, unless it has impeccable credentials. Roperia roperi is a good example and I suspecy that Eupleura grippi is another."

****

The only additional comment to make is that the specimen in question certainly does not resemble any species we know from this coast. It is true that Thais lamellosa appears in a multitude of different forms and seems to produce more than the usual number of puzzling pathological specimens, but San Diego is well out of the range of this species, and I know of no other Thais to which it could possibly be assigned. Therefore the specimen remains something of a puzzle. J.Q.B.

****

The specimen of Tectonatica tectula Bonelli sent to me by Prof. Roberto Malaroda, director of the Instituto Di Geologia, Torino was sent to Dr. W.P. Woodring for his opinion. Dr. Woodring's reply follows:

" I am greatly indebted to you for the opportunity to examine the specimen of Natica tectula identified by Sacco. I agree with you that, despite the lack of information concerning the operculum, it is a good Cryptonatica. I,therefore, am reverting to Tectonatica, although for many years I had misgivings concerning my part in the introduction of that name in American literature. Your specimen has been returned by airmail."

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Recent editorial notes have brought a number of supporting letters from those of unquestioned professional standing. Among them is the following humorous note from Professor Trevor Kinkaid of Washington: " My dearJohn : Your remarks in re superflous genera finds a responsive chord in my thinking. There seems to be a tendency among taxonomists as they concentrate on a group to magnify differences so as to develop a myopic vision of the problem, and as a result taxonomy becomes a sort of game in which the winner is the one who creates the greatest number of superflous names. As my father used to describe people who disagreed with him " they suffer from intellectual,moral and spiritual strabismus". This latter expression is the medical term for " cock-eye". "

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An Abridged Check List and Bibliography of West North American Marine Mollusca by Dr. Myra Keen was published by the Stanford University Press in 1937. The book has been in constant use by all collectors on this coast.

Dr. Keen has prepared a supplement listing the literature from 1937 to 1956. This has been mimeographed on 13 pages of white paper such as these Minutes are printed.

The bound book with the supplement are available from John Q. Burch for $1.00 postpaid.

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Additional Notes on the Pliocene and Pleistocene Fauna of the Turtle Bay Area, Baja California, Mexico by E.P. Chace is a well written paper of the Transactions of the San Diego Society of Natural History. Mr. Chace is curator of mollusks at the San Diego Museum of Natural History.

Read at the meeting of the American Malacological Union, July, 1956

Haliotis Varia by Robert R. Talmadge

The reason that the Haliotis varia was picked for this short presentation, is the fact that there is some confusion regarding the status of this species. This is not only noted in American, but in foreign collections as well. The Linnaean abalone, Haliotis varia, is a rather maleigned species. This has been brought about by the two schools of zoological taxonomy, the splitters and the lumpers. The early malachologists, working with extremely small series (a single specimen to perhaps three or four), sets that had been presorted as to color and size; and following the trend of that period, gave us many names that have been carried down in literature. Due to the fact that in many cases the collecting locality was vague, in error, or non recorded; it was easy for others to note the similarities of certain descriptions to their material, thus presenting us with other stations, that in many cases have not been verified. Later, when it was discovered that certain named species refered to only a color phase, the taxonomic pendulum swung to the opposite extreme and the lumpers came into their own. To the extreme lumpers, any of the smaller Asiatic Haliotids was a varia, and the species was attributed with many manifestations. Still later as more detailed work was carried on in the far western Pacific area, other species were recorded. This caused further confusion--were they subspecies, species, or just formas. The entire situation could be presented in a question. Were we confronted with a number of closely allied, poorly defined, species, or were working with a single species that had terrific variation?

To solve this problem to my own satisfaction, I tried to obtain as many of the named species as possible, together with their component soft parts. The shells were not difficult to secure, but the soft parts came in slowly, but finally enough were obtained so that some sort of an analysis could be made. It was found that

certain shells had specific types of soft parts, shells that occupied much of the same range. By such methods I was able to my own satisfaction separate the *H. planata* from the *varia*, and found that another type of shell, that had arrived as a *varia* was a distinct species, although no doubt closely related.

During this work, it was noted that there were a number of shells that although rather distinct, had a similar animal. The exact status of these were unknown until a few lots arrived that had specimens of both types of shell, plus intermediate specimens. To me, this indicated intergradation on a racial level, and the study turned to that phase of the project.

The same system that has been utilized in the monographic works on Ornithology was utilized, that is a comparison of populations instead of individual specimens. As the population lots arrived or were studied, each lot was plotted on a large scale map that illustrated not only the surface features, but the depths and currents as well. Letters were dispatched in order to learn as much of the geology of the area under study as possible. By such a study, it was possible to work out the growth stages, endemic races, and pathological specimens and to recognize them for what they were, and to associate any of the specimens that appeared consistent to a definite geological or biological habitat. All told nearly thirteen hundred specimens of the *varia* were examined in this portion of the work.

It soon became apparent that there was a distinct variation that was consistent in the species, a variation that could be plotted, and tied in with geological features. The question then arose as where to, and how to, separate these races. The old rule of seventy five percent was dusted off and found to work in most cases. Then came the problem of how to express the differences to others, differences that to one working with large series were noticeable, but rather obscure to persons working with small sets, or not familiar with the genus. A number of such

methods were tried and discarded, and finally one major and one minor feature were utilized. The sculpture superimposed upon the cording was found to be most consistent and the shape of the shell was uniform enough to be utilized in combination with the sculpture. After checking over these features a number of times, the writer found that it was possible for him to separate the majority of the varia into population groups, each based upon a definite geographical region, or else into intermediate stages that formed the population inhabiting the areas of contact.

It was found that the range of the varia as a whole covered the far western Pacific from the lesser Japanese islands south to at least the Capricorn Group off Queensland. The species ranged across northern Australia to Ceylon and southern India. There were some Melanesian and a few Micronesian stations, but many as listed in literature could not be verified. Records from Mauritius need further study, as the few specimens noted from there all referred to the African pustulata. No contact could be made with the Nicobar, Andaman, or Cocos Islands, nor the southwestern coast of Sumatra. Eastern India, Burma, and other localities in that general vicinity had a sand or mud shore line with little or none of the coral and rock that this genus inhabits.

This range could be broken down into three basic units, each inhabited by a specific type of varia.

Living in the Pacific Basin from the Japanese Islands south into the northern Philippines, thence along the eastern portion of the Philippines, New Guinea, at least to the Solomon Islands, the varia is a bit more depressed and rounded, with strong irregular, coarse tubercles. Around ninty percent of the specimens examined from this area are similar. The major difference is that as one moves southward the size decreases. The underwater shelves are limited, the coral reefs take up only a minor portion of the area, and deep water is the rule. This deep water has a tempering effect upon the equatorial areas, and by the same token as this water

is gradually warmed, it is carried by major currents to the north, thus warming the sea temperature to some extent.

In contrast, the shallow interior seas and straits of the Philippines and Indonesian region, have a much higher temperature, the currents are broken down, and the shelves and coral reefs occupy much more of the underwater terrain. The varia as they leave the open seas, start to alter--They become smaller, more elongate, the irregular tubercles gradually become less and less. At times they are represented by small nodes on the cording, at times there are none, only the cording. By this I do not mean every specimen is such, as one still finds a few specimens with the tubercles, but the percentage is far lower than in the open seas. This population gradually merges into a small, elongate, non sculptured race centered in the shallows of the Java, Flores and Banda seas and the northern portion of the Timor and Arafura Seas. If one had not traced the gradual merging of shell features from the north to the south, it would be very easy to say, that these could not be the same, although perhaps closely related.

In a major jump to Ceylon, Northwestern Australia and Queensland we find a third population. The chief feature of this population is that there are no tubercles to speak of, but these are replaced by a low rounded lamellae radiating from the spire. This is found in juveniles, subadults, and to some extent in full adult shells. There is a break in Northern Queensland which will be covered later. Thanks to Mr. Damon Burford, who furnished a much needed series for study from Darwin and Broom, the intermediate specimens were examined. At Broome the population is the typical southern race, but at Darwin, both the Australian type of shell, the Indonesian form, and specimens of all degrees of intergradation were noted. When plotted on the map, this was found to be normal and the logical area of contact. Specimens from around Cairns and northern points were puzzling--These had the lamellae, were somewhat smaller than more southern specimens, and a number

had nodes or a few tubercles. Mr. E. Chace of the San Diego Museum helped by sending the information on a series from southern New Guinea, which could easily be called intermediate between the Cairns and Solomon Island specimens. Going further into the works on Ornighology, it was found that a threeway intermediate series was not uncommon, and after considering the basic ranges of the three races, it is not too far fetched to refer these specimens to a three way intermingling of the races. The basic geological features of this southern area are deep water as in the north, but the major currents are not as strong. The coral reefs and shallows cover more surface than in the north.

During this project special attention was given to coloration and color pattern. In northwestern Australia there was a tendency to have a maculated green and tan shell, but the percentage did not exceed fifty percent. It is noteworthy to mention here that specimens of the planata and squamata from the south coast of Java and some from this same area had this same green coloration, and this appears to be a more or less localized diet or other ecologic condition. Specimens from the Capricorn Group had a similar condition, but in this case the coloration was a red or reddish brown, and the percentage did not come close to the seventy-five percent basis. With the exception of these two notations, the coloration and pattern appeared to be a condition of the individual. All patterns and colorations could be noted in any of the three basic races and intermediate specimens.

In conclusion, nearly thirteen hundred specimens of the H. varia were compared in population series, and appear to fall into three basic races, each freely intermingling at the areas of contact. These areas may be separated by geological conditions. Coloration appears to have no bearing, except in two minor localities, and there it appears to be limited.

Robert R. Talmadge
Willow Creek, California

MINUTES OF THE CONCHOLOGICAL SOCIETY OF SOUTHERN CALIFORNIA

September 4, 1956

On September 4th the regular meeting of the Conchological Society of Southern California was called to order by the President, Mr. John Fitch.

The minutes were read and corrected inasmuch as the Conchological Society were bosts at the reception for the A.M.U. Convention and not the Pacific Shell Club, as stated in the minutes. There was also a discrepancy in the financial report.

Treasurer, Mrs. Donald Brooks reports the membership still stands at 57.

27 Members were present and among them, Mr. & Mrs. Mucke, Miss Brown, Miss Harris, Mr. Sturgis and Mr. John Korver were given special welcome as guests for the evening.

A communication from Margaret Tesky, Secretary of the American Malacological Union thanked our Conchological Society for "the many courtesies extended during the recent Convention in San Diego" and especially for the reception on the eve of the opening day.

Interesting recent scientific publications, including Australian, Japanese, British and American were brought to our attention by Mr. John Fitch, Mr. John Burch and Mrs. Rose Burch. These were put on the table for examination during the mid-meeting break, as well as some amusing examples of new "habitat"--shells and egg-cases attached to old beer bottles and bones dredged from Santa Monica Bay. President Mr. John Fitch gave specimens of Acila Casrensis (Hinds) dredged off Bodega Bay, to all of us and some large specimens of Kelletia Kelletti (Forbes) were available too.

Considerable discussion was given to tentative plans for a Field trip to San Felipe, Mexico between Christmas and New Year. (Dec. 28 - 31 inclusive) This seems to be one of the times when family groups could take advantage of the good winter tides for a holiday of collecting in Mexico. Plans were also considered for a Field Trip to San Matea Point, near San Diego for Dec. 1st, Saturday.

After the mid-meeting break, Mr. Emery Chace reported on a Field trip to San Nicolos Island of our Coast. Because of the Labor Day holiday, he and friends were given the opportunity to look for Indian relics in this usually closely guarded military area and they hope to return again at a later date to continue their search. Miss Frances Cramer reported briefly on a trip to San Felipe. Also fine specimens of some of the rarer California shells were shown by Mr. John Korver who dredged them from Santa Monica Bay. Since there was no projector available, those wishing to show slides of recent trips were asked to bring them again next time for a showing.

The meeting was then adjourned,

Miss Florence Thurlow, Secretary

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CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year.
We are now meeting the first Tuesday of every month at 7:30 P.M. at the Los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor- John Q. Burch, 1584 W. Vernon Ave., Los Angeles 62, Calif. Telephone Ax 3-5710, Home Ax 2-7965.

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We recently tacked up a sign in our store,

Accuracy
Is Our Motto
We Never Make
MISTEAKS

Corrections of our MISTEAKS are sincerely appreciated even though they merely state that they think we are wrong, but do not have the correct answer themselves. In the following paper the statement is made that " A view disproved is something gained, for it narrows the field". This comment was not original, but when read the truth of it was impressive. After all, how many of us write a paper without using the ideas of perhaps a host of authors whose work is represented on the shelves of our library.

We are sincerely flattered by the rather large file of letters pertaining to our recent editorial comments. A number of them are from recognized scholars, and those not in full accord have offered constructive criticism. We thank you. J.Q.B.

CHARACTERS TO STUDY IN THE CLASSIFICATION OF MOLLUSKS

By John Q. Burch

Lamarck observed that no groups exist in nature, only individuals. By accepting Lamarck's theory we may assume that species as well as all other groupings are mere arbitrary concepts necessary for the mind to make in order to secure a foothold among the enormous mass of facts of structure which no man can grasp.

The animals now living represent but a fragment of those that once existed, and very few of these have been preserved geologically. The evolutionary position of our animal is a matter of conjecture with many differing opinions suggested for most. Classification should show not only similarities of descent, but divergence from the original ancestor and show how far each organism has progressed in its evolution. In this connection the study of the protoconch is no doubt the most informative and interesting. This will be taken up later.

We must define one organism in terms of another. This is true whether we base our facts upon anatomy, embryology, shell characters, or ecology. It is not a mere naming and arranging of the animal we study, but an attempt should be made to assemble all observations about it. The late Dr. Fred Baker must have influenced all who knew him. One of his ideas was that anyone who thought he knew something about a species should publish his knowledge without hesitation because few papers fail to add something to our fund of information, even though the conclusion may later be found to be erroneous. A view disproved is something gained, for it narrows the field.

The curators dream of placing every specimen in an orderly arrangement will no doubt have to wait until some other facts are known. Amonc these will be the cause of variation, the phenomenon of cleavage and differentiation, cell division and inheritance, the marvel of growth and change and others.

It has often been pointed out that few of the large array of morphological monographs are even tolerably accurate, and many of us go far astray trusting the descriptions of others.

In as simple a structure as the gastropod shell there are too many features to be taken in and appreciated at a single glance, and when a number of gradational forms are viewed together it is seldom possible to retain any definite mental immage in passing from one extreme to the other. True, it can be seen by the most casual inspection that they are closely allied, but to say how they are allied is by no means an easy matter.

There is no criterion of morphological value to be given to certain parts or characters. It would seem that the parts showing the least variation should be sought. Some descriptions mention a part as "very variable." This may not be useless, but it should promptly be given a place near the bottom of the list of characters to examine. However, the first thing to agree upon in the study of any group of animals is what character or characters are we going to use for differentiation. A discussion of the morphological terms in general use would be elementary for this group. The recognition of the proper genus to which to assign a shell marks the expert from the novice, and we are fortunate in having two excellent guides in Dr. Myra Keen's

illustrated Keys to West North American Pelecypod Genera and West North American Gastropod Genera. However, there are certain characters of great value in specific description that are seldom mentioned in generic assignments. The purpose of this paper is to discuss the possible value of certain features not usually considered.

The Protoconch of Gastropods

Dr. William H. Dall was probably the first noted conchologist to use this character extensively. His great work in the Transactions of the Wagner Free Institute, 1890, is to this day referred to as a classic in this field. Professor Amadeus W. Grabau was another pioneer, and his conclusions have been with few exceptions accepted.

The protoconch forms the apical or nuclear portion of the gastropod shell and is recognizable in the majority of well preserved shells. In a few only is it resolved or broken off during the later stages of development. It is formed in the egg in the late embryonic stages of development, during or before the veliger period. In some groups the entire embryonic development is passed through within the egg capsule, the entire animal emerging with a fully developed calcareous shell. The early whorls of the protoconch of gastropods (except such ovoviparou types as Cymbium) are smooth rounded coils of the type found in adult Natica. This type was called "naticoid" by Professor Grabau and others, but Dr. Dall included the "naticoid" type in his "trochiform."

As might be expected the characteristics of the protoconch of most living gastropods is very variable.

As a rule the protoconch coils in the same direction as the conch, but some remarkable exceptions are to be found in the Pyramidellidae and others.

The study of the protoconch seems to prove that it is a matter of inheritance, and in some groups it is possible to follow the ancestry back to the Eocene, Oligocene, etc.

While it is true that some specimens may be assigned to a proper genus based on the protoconch, there are many rather puzzling problems involved. The value is rather genetic than generic. Some very different shells will have almost the same protoconch, and some very similar shells will vary greatly in this character. The protoconch is formed in the egg of the mollusk and the conclusion is that it proves a common ancestral form. For example, Fusinus, Purpura, Melongena, Busycon and many others are genetically related, but not as we see them generically.

However, it should be stated here that if you have a specimen showing many of the morphological characters of a familiar genus, but having a very different protoconch, it is almost certain that it does not belong with them, and one more step is taken by the process of elimination.

Who does not like beautiful nicely cleaned shells? However, if your collection is composed of beauty shells, the fine characters of the protoconch have in many cases been destroyed by the action of the muriatic acid. Do not condemn the dealer who supplies the kind of merchandise his customers demand.

In the majority the initial whorl of the protoconch is minute with the succeeding ones enlarging gradually and regularly. In some the initial whorl is large and swollen. Examples of these are Busycon, and Hemifusus. This type of protoconch is generally more or less elevated and oblique, a feature carried to excess in certain volutes. These were called "bulbous" by Dall. You are invited to examine the specimens so labelled.

A discussion of the many variations in the protoconch involving a study of the larval shells is obviously impossible in one evening. A few specimens will be shown exemplifying certain types with brief explanations of them. If large and showy specimens of the Volutidae seem to compose a large part of the examples it may be said that this family branched off of the Fusus, Fasciolaria, Turbinella group during the Mesozoic and will serve to exemplify many of the types.

Larval shells may be classed broadly into two groups, those which were shelly from the beginning, and those which have succeeded to a horny or uncalcified protoconch which is lost before the larval shell escapes from its capsule.

A very interesting example is offered in the Cottonia nodiplicata (Cox), 1910 trawled in deep water off S. W. Australia. This is the type called Caricella by Dr. Dall and explained as follows: "In the typical form the larva is clothed with a cuticular or horny protoconch, probably similar in form to that which when shelly results in the "bulbous nucleus" of the other line of descent. Later on, but while still in the ovicapsule, the deposition of limy matter begins as a slender cone or elevated point along the line of the axis of the protoconch, and as the larva grows the posterior part of the mantle secretes a shelly dome. Being thus cut off from the horny protoconch, the latter falls into shreds and is lost. The nucleus of the larva, still in the ovicapsule, then presents a slightly irregular dome, with a slender point rising from the apical part. In some other forms the elevated point is almost or entirely lacking. These are usually those with large larvae, in which the upper profile is irregularly dome-like and the surface granular 'or unpolished, such as Cymba, and corresponding to Melo in the other line of descent." Dr. Dall called this the Scaphella nucleus. Examples of all are shown here.

Zidona angulata (Swainson) has been a favorite study of Mrs. John Q. Burch. The variations in form of this group are remarkable. In attempting to classify the protoconch Mrs. Burch has concluded that the adult mollusk builds the long pointed spire or spires covering the protoconch. We have here for your inspection specimens showing the nucleus, others with the spire broken showing the nucleus in one specimen a full half inch below the tip of the spire. It is also obvious that the entire long spire is covered with the same smooth enamel covering the entire shell. We have been unable to find in the literature an anatomical study of this species that would explain this peculiar habit. Other than this it seems to fall into the type called "scaphella" by Dr. Dall.

In the "pupiform" type of protoconch, the initial whorl is succeeded by a number of whorls which increase slightly or not at all in size, thus giving a long and slender type of protoconch. An example here is the Xancus pyrum (Linnaeus) of India.

The following are the names used by Dr. Dall in several publications.

1. Trochiform - The spire conical or trochoid, polished, unsculptured and of few whorls.
    - a. Nucleus small, simple. Example: *Volutocorbis lutosa* Koch.
    - b. Nucleus small, planorboid, smooth. Example: *Lyria mitraeformis* (Lamarck)
    - c. Nucleus larger, sculptured, trochoid or planorboid.

      Examples: *Voluta musica* Linnaeus, *Aulica vespertilio* (Linnaeus). Same but without radiating sculpture. Example: *Amoria damoni* (Gray), *Amorena undulata* (Lamark), *Amoria elliotti* (Sowerby).
    - d. Nucleus of *Melo*, very large. Examples: *Aulica imperialis* (Lamarck), *Melo broderipii* Sowerby, *Mamillana mamilla* (Gray), *Cymbiolena magnifica* (Perry)
2. Bulbous type -

   Examples: *Voluta ebraea* Linnaeus
3. Caricella type - *Cottonia nodiplicata* (Cox) as discussed above, *Adelomelon ancilla* (Solander). In this connection you are invited to note and compare a specimen of *Pterospira roadnightae* (McCoy), 1881 with the *Cottonia*. Bernard C. Cotton in his Australian Recent and Tertiary Mollusca, Family Volutidae remarks "This genus seems closely allied to *Cottonia* judging from protoconch features and even adult shell characters."
4. Scaphella type - Examples: *Scaphella junonia* (Hwass)
5. Cymba type.- Examples: *Cymba olla* (Linnaeus) 1766

Eggs of Mollusks

The eggs of mollusks have been watched and studied for form and incubation seeking a clue here that might be of value in classification, It is possible that further research in this field might result in some interesting discoveries. However, the results from the work of several have been dissappointing. Odd as it may seem mollusks of quite different form and habit, and differing in radular and other characters may seem to have very similar eggs. Of course, we recognize the eggs of many species, and the eggs will place the mollusk in one of the large orders, those with similar sexual organs. A number of eminent scholars have published extensively in this field arranging the eggs into orders and keys to them. In the light of our present knowledge the value in separating two species in the same order is questionable, Nevertheless, field collectors should be urged to observe and collect any specimens with eggs bearing in mind that we still do not know the eggs of many species.

The Periostracum

All shells have a periostracu, the outer coat of animal matter, erroneously called the epidermis by some writers. It is true that in a few such as the Cypraea, the periostracum is covered by an additional layer of shell, but these are few. The periostracum varies to an extent that by careful study many species may be readily recognized. Of course, the hairy coverings of Fusitrition, Trichotropis and others are very characteristic. Many species of Conus and Cymatium seem to be separable by noting this character. Some seem to be woven and almost clothlike, others will seem to be composed of long beardlike filaments, others will be silky, others thin and transparent. It is suggested that at least one or more specimens in a set be kept in the natural condition and not cleaned.

The Operculum

The use of this character in classification is occasionally of great value, and may be the only apparent method of separating two species. It is possible that in some groups it may even be a generic distinction.

In working with the Redondo Beach dredgings we found that we were unable to easily separate a species of Tachyrhynchus (a small genus of the Turritellidae) from Bittium without finding the operculum. This was not always easy with such small shells.

However, a fairly extensive study of the Naticidae over the past year indicates that far too much importance may have been given to this variable plate.

The composition of the operculum is a horny plate, and in some species strengthened by the addition of calcareous matter on the exterior. The muscular scar on the inner surface bears no relation to the external lines, and in shape it is different from the muscle scar in the shell. It begins in the embryo and the starting point is called the nucleus.

In many genera, some species have an operculum, others do not. Among these are the Conus, Voluta, Mitra, Cancellaria and others.

A number of families have species with both horny and caleareous opercula such as the Naticidae, Ampullariidae and others.

Oliva has not operculum while the closely related Olivella does have one. Ancilla in the same family has an operculum.

Cypraecassis has none while Cassis, Phalium and others do have.

In many other genera such as Tonna, Harpa, Cassidaria the operculum is obsolate or very rudimentary. Other groups lack opercula of any type, such as Marginellidae, Cypraeidae, Haliotidae, Acmaeidae, Fissurellidae and others.

Liotia has a horny operculum overlaid by rows of calcareous beads.

Dr. Dall published a very interesting paper in the American Journal of Conchology regarding the operculum of our Pacific Coast

[illegible]

[illegible] and problems [illegible] [illegible] [illegible] [illegible] and [illegible] like flooding, [illegible] to supplement [illegible] the various conditions [illegible]

[illegible]

[illegible] division [illegible]

[illegible] are not always [illegible]

[illegible]

[illegible] should [illegible] [illegible] the [illegible] problems.

[illegible]

species Volutharpa ampullacea. Dr. Dall found that the majority of the individuals he studied were without opercula, even without a trace of the pad-like gland from which the operculum is secreted. About 10% of the individuals had traces of the gland, and about 15% had well developed opercula.

It is therefore obvious that you may be very unfair to a careful collector when you criticise him for not having kept the operculum. His species may be inoperculate, or as mentioned he may even have an inoperculate specimen of an otherwise operculate group.

A letter was received by our establishment a few weeks ago in which the good lady ordered a specimen providing it had the operculum, otherwise not. It was decided not to give it an operculum since the creator had never been known to do so.

When the operculum has been damaged it will be replaced by the mollusk but in a somewhat different form. Any very unusual operculum should be carefully examined for injury.

In any event opercula should be carefully studied as a possible specific character, and they may be grouped in a systematic order to determine the exact type of operculum at hand. It should be borne in mind though that to arrange a collection based on this character alone would result in a very revolutionary grouping.

Many learned men, Sars and others, have attempted to tie the operculum in with the radula and other characters to place them in orderly relation in superfamilies or other groups. The results have been far from convincing to this writer.

The various types of opercula should be familiar to all serious students of conchology. They may be roughly divided into eight or nine groups. The reason for the word roughly is that, as might be expected, there is no sharp line between them and the occasional puzzle will appear that seems to fit in or between two groups. As Mr. Kanakoff of this museum facetously suggested once "They refuse to read our books." It will be found necessary to place different species of some genera in two groups - Cerithium is an example. Paludina will go into the concentric, while the closely related Paludomus must go into the lamellar, and many other closely related species will have very different opercula.

Tryon used the following classification which seems to be as good as any.

1. Concentric - increases equally all round - nucleus central or subcentral.
   Example here is Buccinum nipponense. A peculiar feature of the operculum of many species of Buccinum is that the operculum is very small and must be almost useless to the animal in closing the shell. This is almost as useless as the South American Pacific Concholepas. This large shell, while systematically a muricid clings to the rocks exactly like a limpet never at any time exposing the aperture, and yet it has a fully developed operculum.
   There will be no attempt made here to show a large number of specimens, but merely examples of the various accepted forms.

2. Imbricated or Lamellar - when it grows only on one side, nucleus marginal.
   Example here - Polinices lewisii Gould.

3. Claw Shaped or Unguiculate - with the nucleus apical or in front. This is rather a variable group, but for that matter they all are. Examples here are Melongena patula Brod., Kellettia kellettii Forbes, Fusitriton oregonensis (Redfield), and we must assign Strombus to this group or make another merely to contain it although the operculum of Strombus is a bit different being serrated and claw shaped in front.

4. Spiral - grows on one edge only, and revolves as it grows. It is always sinistral in dextral shells.
   The nearest I have to that is Epitonium.

5. Paucispiral or few whorled -
   Examples here are Littorina fasciata Gray and Astraea undosa Wood.

6. Subspiral, or scarcely spiral -
   Examples are the fresh water melanids.

7. Multispiral, or many whorled as in Trochus, where they sometimes amount to twenty.
   Examples here are Calliostoma dolarius Holton and Norrisia norrisii Sowerby.

8. Articulated - when it has a projection as in Nerita.
   Example here Nerita ornata Sowerby.

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The above paper was read at the meeting of the Conchological Club of Southern California- Oct.2,1956

Thinking of the MISTEAK crack on page 1, I recently asked a very competent young woman stenographer to make up a list of shells for sale. Her knowledge of conchology being almost nil, some of the results were amusing. She simply took stock boxes off of the shelves and proceeded to list them, and rather well too. But a few were either very wrong or excellent advertising of some sort. We continue to receive orders daily from Florida in particular for a shell listed as *Polinices mamilla* Lam.,Florida. Of course, the orders are from the curious wishing to know ' how crazy can you get'. BUT the girl was half right. The box was labelled as being taken by a merchant marine sailor on *Florida Island*, New Hebrides.
** I have often wondered how many extensions of range and other oddities in the published literature may have originated in some such listing.

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THE FEEDING OF CONUS

Mr. Allan J. Kohn was the speaker at the meeting of the Conchological Club of Southern California, Oct.2. His subject was " The Feeding of *Conus*". The speaker first showed slides illustrating the anatomy of the stinging apparatus and the venom gland explaining the dissected parts in a clear and interesting talk. This was followed by his Kodachrome film, and this was as full of action as Disney's African lions seizing their prey. *Conus striatus* L. was shown making several kills of fish. One interesting feature seemed to be that the fish showed no sign of being aware of danger until the *Conus* had made actual contact and plunged the barbed weapon into the fish. When this occured the fish made frantic struggles to escape churning up the sand in a desperate effort and struggle for life. On one occasion the fish did manage to escape, but died within a few minutes from the effect of the venom. Oddly enough the mollusk made no effort to eat the fish that escaped apparently being interested only in living prey. After the fish was caught it was amazing to see the mollusk engulf the fish completely taking fins and all through the mouth into the allimentary portion of the body. Believe it or not but the little Blenny fish seemed to have real character and an expression of genuine sadness appeared on his face as he was going down the throat of the mollusk. This was commented upon by several.

Another interesting thing was that such a species as *Conus catus* with very different shell characters has a radula very like that of *Conus striatus* and also a taste for live fish. Other species of *Conus* prefer to dine on polychaetes, still others are canibals and prefer other mollusks for food.

Mr. Kohn has a novel and extremely interesting study.

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UNUSUAL HIGH TIDE COLLECTING By E.P. Chace

On a recent visit to a stretch of rocky coast on one of the Channell Islands I found a flat rocky area just above the high tide line, well covered with broken *Norrisia* where the gulls had dropped the live shells on the rocks to break them and then feasted on the contents. Among the broken *Norrisia* were several *Crepidula norrisiarum* Williamson. A surprise was finding two of the *Norrisia* in which *Saxicava arctica* was nestling in the umbilicus and had complete;y filled it. The specimens are now in the collection of the San Diego Society of Natural History.

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An article in the Los Angeles Times of June 10,1956 tells of the plans being made by the Egyptian government to build up the pearl and sponge fisheries in the Red Sea.

PUBLICATIONS RECEIVED

The Journal of Conchology Vol. 24, No. 4, 30 July,1956.
The following papers are included in this issue.
Anodonta minima Millett in Dorset- A.G. Davis
The Mollusca of the Malham area- L.W. Stratton
Sinistral *Oxychilus cellarius*(Muller) in Sweden-H. Schlesch
A preliminary note on the nature of certain granules from Post-Glacial deposits in the Lea Valley- J.F. Hayward
A new subspecies of *Pila africana* (Martens) - L.A.W.C. Venmans
Further notes on the non-marine Mollusca from semi-arid areas of East Africa T. Pain.
A new species of *Synapterpes* from Colombia- T.E. Crowley
Effects of a gale on the South Lancashire coast- L.W. Grensted
A new locality for *Cypraea* (*Erosaria*) *guttata* Gmelin - Masao Azuma.
*** Note by J.Q.B.- The occurance of this extremely rare species in Japan is of great interest. However, a problem is offered to the person attempting a distributional list of *Cypraea*. The single specimen is said to be dead and faded. It was dredged.

I have no reason to question the shell. The picture shows it to be the species as we know it. However, I cannot avoid thinking of the occasion early in my collecting experience when I collected not one but a number of species in excellent condition off of Terminal Island, California, all being definitely *Japanese shells*. The explanation was not difficult. I had been collecting near a place where ships returning in ballast from Japan dumped or pumped out the ballast. The shells were interesting but I made no mention of extending the ranges across the Pacific.

I prefer personally to wait with interest the occasion when one of our enterprising Japanese colleagues may bring up a living specimen. J.Q.B.

Pisidium obtusale lapponicum Clessin from the Lower Gravel at Swanscombe, Kent- S.P. Dance

Marine Pleistocene Invertebrates from Near Puerto Penasco,Sonora, Mexico by Leo George Hertlein and William K. Emerson- Trans. San Diego Society of Nat. Hist., Vol. Xii, No.8, June 7,1956

This is an interesting contribution to geology and paleontology and the maps show the situation clearly. The species listed are all now living in the Gulf of California.

Two new species of *Nassarius* from the Pliocene of Los Angeles County, California by George P. Kanakoff. Bulletin of the Southern California Academy of Sciences , vol.55, Part 2, May-Aug. 1956.

George P. Kanakoff, curator of paleontology at the Los Angeles County Museum c ntinues his excellent work. The two new species are *Nassarius stocki* and *Nassarius hildegardae*. Both are well illustrated on two plates and the explanation of the age and formation as well as the species is clear and well written.

In the current Bulletin of the So. Calif. Acad. Sci. mentioned above are several other papers of great interest but scarcely conchology. Introduction to Early Western American Prehistory by Ruth DeEtte Simpson.
The Origin of Elsinore Lake Basin by John F. Mann, Jr.
Schizaster morlini, a New Species of Echinoid from the Pliocene of Imperial County, Calif. by U.S. Grant IV and Leo George Hertlein.

Venus- The Japanese Journal of Malacology, Vol. 19, No. 1
New Species of Conidae (Gastropoda) from Japan -Tokubei Kuroda.

This paper describes a number of deep water species of *Conus*. Dr. Kuroda describes the specimens with excellent detail, and the figures in the plates while not really fine are clear. This is an interesting group and would without a doubt arouse the keenest interest in all interested in marine shells not to mention the host of specialists in *Conus*.

The author in this paper has adopted the method of subdivisions of Conidae in which all sections and subgenera in use by many others have been given generic rank. The species described follow:

Embrikena stupa
" *stupella*
Rhizoconus (?) *hirasei* Kuroda n. sp.
Chelyconus (?) (*Profundiconus*) *profundorum* n. subgenus & sp.
" *kinoshitai* Kuroda n. sp.
" *fulmen kirae* (n. subsp.)
Asprella (*Eudemoconus* ?) *teramachii* n. sp.
" (*Conasprella*) *wakayamaensis* n. sp.
" " *ichinoseana* n. sp.
" " " *prioris* n. subsp.

*** Note by J.Q.B.: I am very hesitant about questioning any of the work of as great a scholar as Dr. Kuroda. His contributions to conchology place him among the foremost of noted conchologists of all time. However, it is my opinion that the basic purpose of all systematics is the identification of the animals involved, and to make our system unnecessarily complex seems illogical.

I will be pleased to be corrected but there is a serious question in my mind whether or not it is possible to divide the group formerly known as the genus *Conus* in a manner permitting all individuals Recent and fossil to fall into orderly groups. There have been many attempts and all have left me incredulous. I have tried to use the divisions listed by The Shell Club of the Royal Zoological Society of Australia No. 1 Cones of Australia by Miss G. Thornley for one. Permit me to refer again to the poor comments made above on page 9 regarding the extremely interesting work of Allan Kohn on the feeding and other anatomical characters of *Conus*. The suggested division of Miss Thornly places the species *catus* Brug. in the genus *Chelyconus* and the species *striatus* distantly separated in the genus *Dendroconus*. Of course, they differ markedly in shell characters, and yet we saw with our own eyes the motion picture showing both *catus* and *striatus* feeding on living fishes, and heard the speaker Mr. Kohn call attention to the fact that while the two species do differ much in shell characters their radulae are very similar as well as their habits. The species *vitulinus* Brug. *planorbis* Born and *consors* Sowerby are in different genera while we have a box full of specimen shells that might well fall into any of them and have puzzled us as well as other careful students. Other species are so variable that they might well be divided among several suggested genera.

I wish to give full credit to the work done on this group, but it is my opinion that our present knowledge of *Conus* is far too fragmentary to support a division at this time. J.Q.B.

On a new species of *Lischkeia* (Gastropoda) : *L. undosa* from Japan
Tokubei Kuroda and Rosuke Kawamura.

A new species of *Pecten*(*Chlamys*) from Ryukyu- J.H. Webb.
Pecten (*Chlamys*) *teramachii* J.H. Webb n. sp.

Venus (con.)
Anatomy of *Lymnaea* (*Fossaria*) *truncatula* (Muller) from Japan with Comparison with the European Material- Hiroshi Itagaki
* A very thorough paper, 18pp, 4 pls.
Some Ecological Observations on Janthina- Takashi Okutani
* Some very interesting sketches of the animal in life.
On the Distribution of Fresh-Water Shells in the Mouth of the Yodo River- Hikotaro Kajiyama
On the Variation of Corbicula due to Environmental Factors- Yukitoshi Hayashi
Observations on the Behavior of Non-Homing Limpets-Ryoh-ichi Ohgushi.
A History of the Japanese Conchology-Tazima Kanamaru

Provincial Museum of Natural History and Anthropology-Report for the yesr 1955. This excellent report on the work of the museum includes one large paper " Notes on the Flora and Fauna of Bunsby Islands, B.C." . As well as a faunal list of all of the animal life a list of the recognized mollusks is included. The work is by G. Clifford Carl and Charles J. Guiguet.

Cochlicopa nitens (Kokeil) Gallenstein und C. minima Siemashko, zwei selbstandige Arten im Formenkreis der kollektiven *C. lubrica* (Muller) by Arvid Nilsson- Arkiv. For Zoologi 1956

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Auctions- What fun some of our people have bidding at auctions. Last spring at a book auction in Los Angeles a set of books really got a group excited. It was finally knocked down for a mere $196.50. One of my competitors and I were looking at each other a bit dazed while talking about it because he had a beautiful set offered in his latest catalogue for $35.00 and I had gone him a bit better by listing mine for $32.50. Oh yes- in conclusion, we are both of us still looking for one of those who stopped bidding at around $190.00 because we both of us still have our sets. Worse yet- I have since acquired another set. Whoop it up- make me an offer. But then I assume there is no fun in buying something for just about what it is worth.

****

Hawaiian Shell News- In glancing down the list of interesting notes I see one " Bryozoa name wanted". We may think that we have our disagreements about our generic names and other taxonomic matters, but so far at least no one to my knowledge has started giving the phylum a new name. But as a dealer in literature I must list *Bryozoa*,*Polyzoa* in the same lot. In Europe they prefer *Polyzoa* , in the United States it is *Bryozoa* and the confusion is so complete that I hear that Dr. Libby Hyman is settling the matter by giving them a third name.

But the shell news to rival the flying saucers is the taking of living *Conus gloria maris* in the Philippines close to the original location. Now for a fanciful dream- Just what would I do if my shipper in the Philippines should nail up one of his big mahogany boxes full of them. Of course, pass them out to the waiting line at 1000 bucks each for a bargain. Reminds me of the old saying that there is no such a thing as a rare shell but just being in the right place at the right time.

Now I see a good paper on Shell Cleaning Hints. Might just add one. Ever try putting them in the deep freeze in your refrigerator. It helps, believe it or not.

Minutes of the Conchological Club of Southern California

October 2,1956

The regular meeting of the Conchological Club of Southern California was called to order by the president, Mr. John Fitch, at 7:30 ,Tuesday evening, October 2,1956. A warm welcome wqs extended to the 53 people present including the 18 guests who were introduced by Mrs. Rose Burch.

The business meeting was dispensed with because of an unusually long and interesting program.

Mr. Alan J. Kohn showed his Kodachrome film entitled " Feeding in Conus striatus and Conus catus." He also discussed his experiments on the chemistry of the venom as well as showing slides illustrating the venom apparatus and the radular teeth.

Following our mid-meeting break, Mr. John Q. Burch read a paper on " Shell characters of value in classification" and illustrated it with specimens.

We were reminded of the two fie;d trips coming up soon.
Dec.1,Saturday; San Mateo Point (half way to San Diego)
Dec. 28-31(Inc.); San Felipe, Mexico

Mrs. John Q. Burch, Mrs. Mary Turver, and Mr. George Kanakoff were appointed to form a nominating committee to select a slate of officers for the coming year.

The meeting was then adjourned.

Respectfully submitted,

Miss Florence Thurlow,Secretary

9-6

MINUTES 163
NOV. 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

We are now meeting the first Tuesday of every month at 7:30 P.M. at the los Angeles County Museum, Exposition Park, Los Angeles, Calif. All interested persons are cordially invited.

Please mail all news to your editor- John Q. Burch,
1584 W. Vernon Ave.,
Los Angeles 62, Calif.
Telephone Ax 3-5710
Home Ax 2-7965

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MORE RANDOM NOTES ON MOLLUSCAN TAXONOMY
by John Q. Burch

Mayr,Lindsay and Usinger in their book " Methods and Principles of Systematic Zoology",1953, added another scholarly treatise. The errors of the novice may be forgiven, but it seems incredible that so many professional conchologists either disagree or have simply not read the work of the best known recent authors such as Mayr,Dobzansky, Simpson, Keen and Muller (Third Ed. of Proceedure in Taxonomy) and others.

With the first mentioned book open on our desk this evening, the statements in quotation marks will be from the book. All other comm--ents may be charged to J.Q.B.

" The reclassification of all related forms originally described as monotypic species into polytypic species has led to a tremendous clarification of the system. It is in full swing for mammals and under way for butterflies,beetles and land mollusks, but has hardly

begun in most groups of animals.... In 1870 about 11,000 and in 1910 about 19,000 species of birds were listed, but in spite of the numerous subsequent discoveries, only 8,600 species of birds are now recognized" (Mayr,1946).

Dr. R. Tucker Abbott in his great work " American Seashells" 1954, stated that there are close to 100,000 described species and subspecies of mollusks. How many of these will prove to be monotypic species is a matter of conjecture. It should be added that the 100,000 living species are but a fragment of those that once existed.

The aspirant to become an expert on the entire phylum reminds one of a statement frequently made by professors in law schools that a rapid reader reading steadily for twenty four hours without sleeping or eating could read but a fraction of the law made that day. Perhaps conchology has not reached that figure, but the daily average of systematic publications in all languages is an imposing stack of print. Another old legal quip might also be apropos " He who claims to know the law is either a fool or a knave." In any event conchology has reached the age of the specialist.

The literature is full of fantastic nomenclature, and mollusks have certainly not been neglected. In fact, there are many publications on our own California species to rival the classic mentioned by the authors in this book as follows:

" In fresh-water snails and mussels such habitat forms are particularly common. The upper parts of rivers, with cooler temperatures and a more rapid flow of water, have different forms from the lower reaches with warmer and more stagnant waters. In limestone districts the shells are heavy and of a different shape from those which grow in waters poor in lime. This dependence of certain taxonomic characters on environmental factors was, curiously enough, entirely overlooked by some earlier workers, a fact which resulted in completely absurd systematics. Schnitter (1922), who largely cleared up the situation, described these absurdities as follows: The last step in the splitting of the fresh-water mussels of Europe was done by the malacozoologists Bourguignat and Locard. According to the shape and the outline of the shell, they split up the few well-known species into countless new ones. Locard lists from France no less than 251 species of *Anodonta*. On the other hand, two mussels were given the same name, if they had the same outline of shell,even though one may have come from Spain and the other from Brittany. It seems incredible to us that it never occured to these authors to collect a large series at one locality, to examine the specimens, to compare all the individuals and to record the intermediates between all these forms. It is equally incomprehensible that these people did not see the correlation between environment and shape of shell, even though they spent their entire lives in collecting mussels.' All of these species of *Anodonta* are now considered to be habitat forms of two species, the other names have been sunk into the synonymy of the two valid species."

" Species are groups of actually (or potentially) interbreeding natural populations which are reproductively isolated from other such groups."

For an informative discussion of polytypic species the above mentioned work is recommended. A few examples may be in order here. A group of seemingly countless similar species might be the turrid *Megasurcula carpenteriana* (Gabb). In our early years of collecting we were proud of specimens illustrating several different species all based on variations in the degree of carination and arrangement of the nodules. It was unfortunate for this happy solution that we found where to trawl them in great numbers from one limited locality

off Redondo Beach, California in approximately twenty five fathoms. The result was that from the large numbers at hand we could cover a table top with them starting out with some as smooth as a water glass then the slightest indication of a node, and ending with a heavily shouldered lot showing heavy nodulation. It was impossible to point out where one ended and another began. Any novice could find it apparent that we had but one biological entity.

Similar examples in our experience could be continued to the point of being boresome. Some years ago in sorting through a large quantity of dredgings we were following the published descriptions and keys to the best of our ability, giving careful consideration to the most obscure shell characters. Among several other similar cases we found two presumably monotypic species that gave us intergrades of all degrees. The author of the species was still living so we sent XXX a generous sampleto him, and being a genuine scholar he promptly replied that our findings were correct. The two species did intergrade, but we were at that time naive enough to be a little surprised since the two species had been assigned to different generic divisions.

On the other hand a study of the variations in the protoconch led us to suspect that certain other species seemingly as alike as eggs in a carton, might in fact prove to be not one species but several. Composite species are fairly common in some other groups of animals and may be more common in mollusks than we think they are.

Moral though- If you have a few dozen specimens nicely classified, stop there, because the collector who gives you a thousand specimens will prove to have been no friend of your classification.

Mayr,Lindsay and Usinger describe a genus as follows: " A genus is a systematic category including one species or a group of species of presumably common phylogenetic origin, which is separated from other such units by a decided gap."

" The most essential point to be kept in mind is that primarily a classification should be practical; it should create order out of chaos."

" However, a genus that has no " diagnostic character", that is, no character or combination of characters that separates it clearly from other related genera, is of doubtful validity."

" Taxonomic literature could have been spared many unnecessary generic names if taxonomists had kept in mind Linnaeus' (1737) warning: " The characters do not make the genus, rather it is the genus that gives the characters."

It might be suggested that the conchologist considering the description of a new genus should study the extent of variation of the morphological and other characters when possible in the entire family both Recent and fossil, and not simply assume that because it seems to be distinct in the fauna of his particular locality there can be no other related species. J.Q.B.

" A thorough knowledge of all possible forms of individual variation is necessary whenever the taxonomist is forced to make a decision as to whether certain specimens represent a different species or individual variants."

We do not question the existence of monotypic genera, and know of a number that we consider valid and necessary. J.Q.B.

" Most genera (particularly monotypic ones) could be united with other genera, and most polytypic genera could be subdivided equally well into smaller genera".

" On the other hand there is a tendency for specialists to exaggerate the importance of their group and to split categories to an extent which is inconsistent with the practice in related groups."

Minutes 163, Nov.,1956 p.4

In the discussion of subspecies- " Subspecies are geographically defined aggregates of local populations which differ taxonomically from other such divisions of a species."

" ... The difference must be sufficiently great so that it is possible to identify the great majority of specimens without knowledge of their provenience. For that purpose, many taxonomists adhere to the 75 per cent rule."

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*** Note by J.Q.B. Please believe me that the above was not written as a sales canvass,but, just in case some one might have read this far, and be interested, the following books are recommended and in stock for sale by John Q. Burch.

Proceedure in Taxonomy, Third Edition, 1956 by Schenk and McMasters, revised by Drs. Myra Keen and Siemon William Muller.	$3.50
Methods and Principles of Systematic Zoology, 1953 by Mayr,Lindsay and Usinger McGraw Hill	$6.50
Genetics and the Origin of Species by T. Dobzansky 1951 Columbia University	$5.00
Evolution,Genetics and Man by T. Dobzansky, 1955 Wiley	$5.50
The Major Features of Evolution by George Gaylord Simpson 1953 Columbia University	$7.50
The Principles of Classification and Classification of Mammals by George Gaylord Simpson Amer. Museum 1945	$3.50
The New Systematics by J.S. Huxley 1940 Oxford	$4.50
Evolution, the Modern Synthesis by Julian Huxley Harper	$7.50
Evolution in Action by Julian Huxley 1953 Harper	$2.75
Evolution as a Process by Julian Huxley 1954 Macmillan	$4.25
Paleontology and Modern Biology by D.M.S. Watson 1951 Yale	$4.00

Mayr- Systematics and the Origin of Species 1942 Columbia University

*** This scholarly contribution is now out of print and in great demand. I have been advertising for it in the trade journals, but have been able to purchase but a few copies. Any one knowing of an available copy will receive the sincere thanks of one of the list who are eager to get a copy.

****

Advantages of High Blood Pressure

One of our best personal friends and not infrequent house guest has a better argument than any college debater ever dreamed of, and more than handy during these days of heated politics. It is simply " I favor ... and please do not disagree with me because that causes my blood pressure to rise and makes me ill." He really does have high blood pressure.

We trust though that nothing we write in this small mimeographed sheet will be sufficiently controversial to cause any of our friends a serious illness.

WASTED TALENT

What business man would carefully select an employee from those having spent many years earning their Ph.D. or more from one of our great universities, pay him a salary commensurate with his abilities, and then require him to spend most of his time acting as a doorman ? If he were to do so he could expect the men in white coats and the net when his business associates sounded the alarm for a mental examination.

How much has science lost because many of our ablest curators are too busy with useless routine to find the time to do the research they are trained to do ? We know of one institution that requires their curators to teach classes of children the rudiments of nature study. Is it any wonder that those men have comparatively little time for serious study ? We have seen such highly educated men of science stop an important study to attend a little girl who appeared with a paper sack full of beach bone shells. No one will deny that the little girl should have her shells properly named and be encouraged, but there are countless young men and women who have had ample education to qualify them for this duty, and who would be delighted to have the job for a fraction of the curator's salary. Even though the little girl might have an uncle or someone who is a senator or other man of importance, it would seem that a competent assistant should be sufficient.

If such a phrase as " extravant Economy" is ever applicable we feel that cutting the budget on clerical assistants is exactly that.

As dealers we could spend half of our time classifying specimens for others. It is a thankless job anyway, not to mention the financial loss, and the dealer has the great advantage of being able to merely shrug his shoulders if he makes an error. The professional scholar who places the wrong name on a specimen is severely critisised. It is even possible to cause trouble by placing the correct name on a specimen. We recall the amusing experience of having a collector bring in a not uncommon north Pacific shell and ask our opinion. We immediately classified it without knowing that the owner has purchased it at a high price labelled a great exotic rarity. What a riot that caused ? I think we lost the friendship of all involved.

On another occasion I was not certain whether to be flattered or annoyed when I paid a visit to a beach shop selling curios and some shells and noticed one of my labels on a large tray of shells " Classified by Burch". The only trouble was that there were at least four entirely distinct species in the lot. One had been purchased from our store, and the name used for everything in the family. I am able to make plenty of " MISTEAKS" on my own without any such help.

I have seen such absurd things labelled " Identified by U.S. Natl. Museum" and sold as such, and while gambling is not one of my many weaknesses, I would give Las Vegas odds that those particular shells never visited the U.S.N.M.

Of course, it is a nice idea just to think of the countless hours of study I could save by simply having the great museums do my work for me, not to even mention saving the ataggering cost of a library. But all of my friends in the great institutions know that the shells I have sent to them have been either gifts or something of mutual interest. It annoys me to see boxes full of miscellaneous shells sent to busy men to name, when, while I do not know, it is a fair wager again that the same species might be sent again. Of course, the label of a great museum adds $$$ to the value of any specimen.

We note that Dr. Tucker Abbott has announced a charge of $5/00 per hour for identifying specimens. It is my sincere hope that thia

business will be very poor, because I feel that Dr. Abbott would be doing a great deal more for us by devoting the same time toward the completion of the scholarly research in which he is engaged.

We suggest that Drs. Rehder and Morrisson should certainly have assistants. Among them should be a competent photographer. It might even be possible to have the host of unfigured species described through the years by Dr. Dall and others. Many of them are known only from the type lot, brief description and no illustration. Is it necessary to mention the difficulty of attempting to classify a specimen by reading a short and inadequate description word for word and line for line ? The only way to feel certain is a trip to see the type, and even then if without your own comparative material none but a superman could recall all of the minor shell characters.

************* J.Q.B.

Murex elongatus Solander 1786 = Murex clavus Kiener 1841

We were asked the reason for not using the specific name clavus. Dr. W.H. Dall in Nautilus, vol. 34, pp 97-100;124-232 listed " Molluscan species named in the Portland Catalogue,1786."

If there is any reason for not using Solander's name for this species I will sincerely appreciate hearing of it.

****

One of our very successful surgeons M.D. has taken a great interest in conchology the past few years. A few excerpts from a recent personal letter should be of interest.

" Many thanks for sending the Oct. issue of the Minutes to me. I was especially happy about your remark " ... that the basic purpose of all systematics is the identification of the animals involved, and to make out system unnecessarily complex seems illogical". One cannot express better a very important objection to so many attempts to make subgroups of obvious systematic entities. There would be no objection to subgenera if the authors did not use the names as generic names....these persons have completely forgotten the purpose for which Linne' created the two name system.

You know very well that there is still another objection to the present state of systematics, namely the curious rule of priority. That rule has led to an abstruse type of " philology"(which is really ridiculous) , namely to find out who used a certain name first. .... There would be such an easy remedy, namely to follow the example of the anatomists. Why do the zoologists not create a commission whose task it would be to determine internationally the names most frequently used and most logical, without considering the priority, and with the understanding that such a name must stay unaltered unless there is evidence that the species belongs definitely to another family, and such evidence must be accepted by the respective commission".

** Note by J.Q.B.** I am not ready to agree with the doctor on entirely abandoning the rule of priority. Mayr,Lindsay and Usinger state that there are 1,120,310 known species of Recent animals. This does not include the vast host of subspecies, nor the far greater number of fossil species. Our commission would have a very busy evening settling a few million arguments.

However, the fact that the point is well taken is too obvious to require further comment. We live in constant fear that some antique dealer will discover another unknown tome in the dust of some century old attic, and promptly destroy a hundred years of nomenclature.

****

The Fisheries Newsletter of Australia for July,1956 carries an interesting article about the establishment of the culture pearl industry in Australia. The large MOP of their waters may produce different or better culture pearls.

It is always difficult to publish a paper that was originally given with numerous excellent slides. The following paper was read at the meeting of the American Malacological Union in July,1956. It will be impossible to do justice to Dr. Howard's study, but we feel that the information in it should be preserved.

PTEROPOD MOLLUSKS FROM THE CARIBBEAN

by Dr. A.D. Howard

Seeing my paper on Pteropods in the minutes of the American Malacological Union of 1953-54, the secretary, Mrs. Teskey sent a small box of material. The lot contained a number of pteropods free of bottom refuse, evidently sorted out. In addition there were two large vials of bottom material labelled as follows:

Station 2751- November 28,1887
" Steamer Albatross"
Lat. 16 Degrees, 54' North, Long. 63 Degrees 18' West
Depth 687 fathoms
Station 5385- March 9,1909
" Steamer Albatross"
Arena Point Ragay Gulf
Luzon,Philippines
Depth 327 fathoms

This was evidently the residual material from the dredging, after the macroscopic shells had been removed. We call such residual material " bottom samples" as we get them from the Valero dredge (Hancock Foundation).

The location in geographical terms is Eastern Caribbean. The collection has historical interest as a dredging by the government oceanographic vessel the " Albatross", a pioneer in oceanic exploration.

On examination, the lot was found to contain the following:

9 species of Pteropods
45 bivalves
6 Atlantidae
45 brachiopods
15 gastropods
35 opercula (not identified)
43 Foraminifera etc.

Before taking up the enumeration of the species of pteropods I wish to say a word about the methods of securing these peculiar mollusks. The sheletons as here found in " bottom samples" have varied and characteristic forms. The living pteropods are seldom seen except as caught in a tow net. They are photophobic descending in daylight and coming to the surface only at night. They may be taken by a townet, the depth depending on the time of day. These free-swimming mollusks are called " Sea Butterflies". They have two fins, extensions of the molluscan foot which by rapid movement propel them through the water. They occur in swarms, and as such form an important part of the plankton, and are important economically as the food of whales and fishes. This leads us to one method of collecting them:- That is, by the examination of the stomach contents of fishes. Mr. Carlisle of the California Department of Fish and Game showed us examples of the pteropods of which he found 114 in the stomach of a horse mackerel. Also Mr. John Fitch of the same

department has shown us specimens from the stomach of the lance fish, *Alepisourus borealis* and others.

In all we have three ways of collecting, (1) by dredging and " bottom samples" we find them on the ocean floor. We can learn to some extent the distribution of these bottom deposit shells. Some species are world wide in distribution, others are limited as polar or tropical species,(2) by tow net we get them alive, and (3) in the stomachs of fish in various stages of digestion.

The distribution is from the Cambrian to Recent. Their early occurence in the time scale leads some paleontologists to the belief that they are an independent group that is not derived from the Opisthobranch mollusks. There has been considerable controversy over this point. As they are pelagic the conditions controlling their lives have been the same from the beginning, not subject to the changes that have operated on many animals.

The Pteropods have been placed by most workers as an order under the Gastropoda. This order is divided into Thecasomata or shell bear--ing and Gymnosomata without shells. Our experience has dealt chiefly with the Thecosomata as it is with the shells that we are concerned mostly. There are a number of families and genera under each group.

I will show a drawing of one of the *Cavolina* , the rather common species *Cavolina tridentata* Lessuer which will give an idea of the internal anatomy of all the Thecosomata although the shell varies a great deal. The Thecosomata feed on algae and protozoa while Gymnosomata eat animals and other swimming plankton.

The simpler pteropods, the Limacinidae have coiled shells, like snails but sinistral and with side flaring orifices. *Limacina inflata* is the representative which we find here. It is very small only 1½ mm in diameter and has a distinctive appearance, an extending point to the shell, beyond the spiral.

Creseis acicula Rang is a long needle like form.

Cresseis virgula conica Eschscholtz is not as narrow as *C. acicula* and is curved.

Clio, a genus named by Linnaeus is triangular in form and with a transparent shell.

Clio pyramidata is the form here.

Diacria- This group is marked by a thickening of the edge of both the dorsal and ventral shells.

Diacria trispinosa (Lessueur) has conspicuous side spines and a long posterior projection.

In the genus *Cavolina* the shell is most strongly arched, especially on the ventral side.

In *Cavolina longirostris* we have an extension of the ventral shell on both sides giving the form of an isosceles triangle.

Cavolina uncinata (Rang) which we have here is no more common than in the northern collections.

Cavolina inflexa (Lessueur) the last of the *Cavolinas*, is a species which we find also off the coast here in California.

I show the local form caught in a tow net with the fins and viscera visible.

Cuvierina columbella (Rang) is a cylindrical form.

Some 18 specimens were collected- identification uncertain.

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Publications Received

Sally Diana Kaicher has published the fifth of the proposed series of eight booklets " Indo Pacific Shells- A Guide to the Common Marine Snails from East Africa to Polynesia." They sell for $1.00 each and may be had from John Q. Burch or the author.

Each of the booklets covers one or more of the orders or super--families illustrated by 6 or 7 full page plates each figuring a number of species. The figures are in black and white, but are clear representations of the species. The nomenclature is good and to date with such as the Roding specific names under which are shown the better known Lamarck names in synonymy. As the author states, these brief treatises do not figure all of the recognized species, but only the better known. Nevertheless they are a very valuable supplement to any conchological library.

It would be impossible to publish a work on such a large fauna and not cover many contraversial matters of taxonomy. For an example, this work, Allan " Cowry Shells of World Seas", and Schilder and Schilder " Prodôme of Living Cypraea" have divergent views on the identity of certain species. Kaicher uses the name his*tri*o Gmelin for the same species Schilder described as *maculifera*. The debate if one cares to call it that boils down to what species Gmelin had. Martyn used it first, of course, but his work is being disregarded as non binomial. Schilder and Schilder had a great deal to say about the matter. Of course, it would take an entire issue for Mrs. Kaicher to cover the ramifications of this small group alone. It is interesting because she may be right, and if so then everything else that has been published for many years is wrong.

Kaicher conforms with the current trend of splitting all of the old genera into a host of new divisions. It is still barely possible that there may remain a few genera that are not monotypic, but it is getting to be a surprise to find two species in the same genus. If so it is assumed that it is a mere matter of getting to them. I am not questioning the possibility of separating for example the Conidae into *Asprella*, *Stephanoconus*, *Puncticulus*, *Gastridium*, *Dendroconus*, *Lithoconus*, etc. etc, etc, etc.etc., but where is the advantage to be pointed out in justification of such a chaotic shuffle of an obviously related group such as the *Conus*? Let the splitters use subgeneric divisions if they must, but why compel all of us to learn and catalogue two names for every species ? If I made the remark " I saw an odd form of *Gastridium* today,"I will wager that one could easily count the persons on the face of the earth who would suspect that it was a *Conus* to which I referred.

Now after the above " sales talk", I wish to add that I find these little books well done and well worth while. After all you do not have to use the new generic splits unless you wish to do so. I,for one, still have an entire section of my cabinets full of the now old fashioned " *Conus*" , and another of the now almost obsolete " *Cypraea*."

The issues now ready are:

1. Tonnacea-- Cassididae,Bursidae,Tonnidae,Ficidae
2. Naticacea and Cypracea- Naticidae,Ovulidae ...
3. Littorinacea,Cerithacea,Calyptracea,Strombacea..
4. Pleurotomacea,Patellacea,Trochacea ..
5. Toxoglossa- Turridae,Conidae,Terebridae

Basteria- Vol.20, No.2,1956 The journal of the Netherlands Malaco--logical society. The papers are : J.A.W. Lucas " Mededelingen uit her Filiaal, I (vervolg) pp 29-41; W.S.S. van Benthem Jutting "Land en zoetwatermollusken van Texel,Vlieland,Terschelling.. ; C.A. van Regteren Altena " The genus *phasianema* in the Pliocene of W.Europe".

Freshwater Mollusks of Alabama, Georgia and Florida from the Escambia to the Suwannee River by William J. Clench and Ruth D. Turner-Bulletin of the Florida State Museum, Biological Sciences, Volume 1, No.3, Univ. of Florida, Gainesville, September, 1956. Pages 96 to 239 and 9 full page plates. The figures are clear and the distributional dats is extensive.

** A work such as this one is on the fauna of California would be a relief. We seem to have the pelecypods in fair agreement anyway, but I have yet to see two collections of fresh water gastropods from California with even similar ideas of the species. JQB

Studies in the Genus *Olivella*" by Axel A. Olsson, Proc. Acad. Nat. Sci. Phil, Oct. 3, 1956 pp 155-225, 16 pls.

This is the way a paper should be written. The characters of the genus as a group are clearly stated. The subgenera are listed giving the type species of each. This is followed by a Key to the Subgenera of *Olivella* on shell characters. My experience has been that many such keys behave like some pets and only perform for their owners on certain occasions, and it is a hobby of mine to try them out. This one works beautifully for my specimens, and I am delighted with it. The figures on the plates are also good and clearly illustrate the characters used. Too many seemingly fine figures leave some of the characters to the immagination of the reader. This last comment is so true of many figures of the Panamic species of *Olivella* with the result that errors in identification are almost the rule. When several serious students simply cannot agree, it may be assumed that this confusion was badly in need of this work by Dr. Olsson.

However, there are two species listed by the author on which I need assistance. I either have too many specimens or not enough. Under the subgenus *Callianax* H. and A. Adams, 1853, the author lists all of the species I have been able to recognize- *Olivella biplicata* (Sowerby, *Olivella baetica* Carpenter, and *Olivella pycna* Berry. With these I have no difference unless it may be the spelling of the trivial name *O. boetica* vs *baetica*. The following note by Dr. Joshua L. Baily appearned in our Minutes of June, 1945 and I have followed his conclusion since that time-" *Olivella baetica* Carpenter, Frequently mispelled *boetica*. because the edition of Carpenter's work in which the name was first proposed used type in which the combination of letters that were united in a single character made the *a* look more like an *o*. If this be compared with the termination *idae* in the same work it will readily be seen that Carpenter spelled the name *baetica*."

The author now lists as Recent species *Olivella pedroana* Conrad and *Olivella porteri* Dall. In regard to the first there have been gallons of ink devoted to this contraversial name. Dr. S.S. Berry discussed the matter in the paper in which he described *Olivella pycna*. The question seemed to be whether or not *O. pedroana* was recognizable or a *nomen nudum*. And as for *Olivella porteri* Dall it has been my opinion that it is at best a poorly defined ecological race of *Olivella baetica* Carpenter. The figure given by Dr. Olsson Plate 10, fig.2 is to my eye a typical specimen of *O. baetica* , or what I have been calling *O. baetica*. I have collected these shells by the thousands the length of the coast. The countless variations of *O. baetica* in my experience were at their maximum off shore in shell water, perhaps 10 to 15 fathoms on sandy bottom.

In conclusion on these I will sincerely appreciate a key that will enable me to recognize more than three species with their variations from this coast. Of course, I do not include the Mexican forms.

If valid, *O. pedroana* should have priority.

(con.)

We have been enjoying the new book this evening. Dr. Olsson has described a new subgenus *Zanoetella*. In checking through many sets labelled *Olivella volutella* (Lam.), we ran across a large set so labelled in error, and are pleased to find that they fit every character of the new subgenus, and have relabelled the set as follows: *Olivella* (*Zanoetella*) *zanoeta* (Duclos), Isla Grande Bay, Mexico in 10 fathoms, George Willett leg.1940.

We had hoped to find specimens of *Olivella* (*Olivella*) *bitleri* Olsson,1956 because we have many specimens of the genus from Panama and other Panamic localities including some sent us by Capt. Bitler, but no *Olivella bitleri*, at least for this evening.

In looking over some of the lots of *Olivella* (*Lamprodoma*) *volutella* (Lam.), we have one huge lot (perhaps a gallon or more) brought in by a collector who gave the locality as Tehuantepec. These are unusually large, giants for the species, and so being easy to check we noted a surprising variation in the number of the mitra-like folds. They range in number all the way from 6 or 7 to as high as 10 or more, but all are from the same colony, and are identical otherwise including the customary wide variation in color markings. I fear that if one of our super splitters were to get this lot we could expect at least 20 new species, but what am I talking about, another liration should be a generic character, no less, maybe more.

Now if Dr. Olsson will supply another book as workable as this one proves to be on the *Oliva* , the situation would be in hand. I did not mention the great mystery surrounding the Indo-Pacific species, the mystery being how many pages of synonymy will be needed for each valid species when they are properly revised.

*** I do not know the price of this work nor even whether it can be purchased as a separate, but surely everyone interested in marine conchology should have a copy. I suggest that you write direct to the Academy of Natural Sciences of Philadelphia, Philadelphia 3, Pa.

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The Eastern Pacific Marine Mollusks Described by C.B. Adams By Ruth D. Turner. Occasional Papers on Mollusks, Published by the Department of Mollusks, Museum of Comparative Zoology, Harvard University, Cambridge, Mass. pp 21-136, 17 plates.

This is a work of such value to us that it is difficult to express proper appreciation. For years we have used Adams Catalogue of Panama Shells ,1852 , and on many of them have used our immagination to figure what he actually had in our mind. Among many others of particular interest is the figure of lectotype of the *Buccinum lugubre* Adams. When my son and I first found specimens in numbers in our dredgings off Redondo Beach, Calif. we checked against everything known in the California fauna, and thought for a time that we had a new species. However, our shells seemed to match other lots ranging all down the coast in every particular. Thomas A. Burch published an article in Nautilus 54:46 figuring and discussing it. At that time he called it *Cantharus*, but we later thought it should perhaps be assigned to *Drupa* , and in Minutes 149,Aug.,1955 I listed it as *Morula lugubris* (C.B. Adams),1852.

There are numerous other figures here that would have saved many lengthy discussions had they been available some years ago.

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MINUTES 164
DEC. 1956
CONCHOLOGICAL CLUB OF SOUTHERN CALIFORNIA

Subscription $2.50 per year

Editor- John Q. Burch, 1584 W. Vernon Ave., Los Angeles 62
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The next meeting of the Conchological Club of Southern California will be our annual Christmas party to be held at the Burch home, 4206 Halldale Ave., Los Angeles, the evening of Tuesday, Dec. 4, at 7:30 P.M. A committee has been appointed to relieve Mrs. Burch of all of the plans for the party.

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The following new publication has been received-
A Historical Review of the Mollusks of Linnaeus, Part 4. The genera Buccinum and Strombus of the Class Gastropoda by Henry Dodge. Bulletin of the Am. Mus. Nat. Hist., vol. III, Art 3, 1956. Price $2.00 and may be had from John Q. Burch.

Mr. Dodge has given us another scholarly work. This series is settling many contraversial matters of taxonomy. The fact that most of the genera of Linnaeus became family groups containing many others is well known, but the histoty and the synonymy of this breakdown has been little known. Authors have erroneously assigned many species of Linnaeus, and on other occasions credited later writers with Linnaen species. In this work Mr. Dodge necessarily discusses the work not only of Linnaeus, but that of the host of later writers to date. This series by Mr. Dodge is a scholarly work of inestimable value to serious students of molluscan systrmatics. It is not recommended and would be of little value to the amateur.

THE AMERICAN MALACOLOGICAL UNION

July 16-19 has been chosen for the date of the 1957 meeting at New Haven, Conn, Yale University.
The Connecticut Shell Club and Percy Morris will be co-hosts, or are they one ?
In any event those of us who will not be in attendance will surely regret it and assure all that it was from no lack of desire.

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New Publications

The Nautilus- Vol. 70, No. 2, Oct.,1956.
Natural Biological Control of a Mya Predator by Arthur Haddleton Clarke Jr. -- Nassarius trivittatus (Say) consuming the eggs of Lunatia heros.
Notes on the Freshwater Mussels of New Guinea by Donald F. McMichael
An interesting paper on a little known fauna. Illustrated by a page distributional map and one full page plate.
Distribution of Living Glycymerids With a New Species From Bermuda by David Nicol.
The author briefly but clearly defines the major divisions of the family, and the description of the new species Tucetoma subtilis Nicol includes the comparative notes clearly pointing out the differences with related species. Unfortunately this is often lacking in the descriptions of some authors. The photographic figure is clear, and the full page distributional map of value and interest.
The Polymorphism of the Japanese Littleneck Clam by R.F. Shaw.
A very thorough study of the variations in the Tapes semidecussata, a species introduced from Japan but now so well established that it is of commercial importance on this coast.
Distribution of Land Snails in Plant Associations in Eastern Virginia by John B. Burch. -- A very careful study of the host plants of the species, illustrated by a full page table.
Predators Need Defending by Albert R, Mead. Dr. Mead again gives an informative and certainly entertaining account of the merits and demerits of biological control.

The Taxonomic Significance of Gaps in Pelecypod Morphology by David Nicol- Systematic Zoology, Vol. 5, No. 3, Sept.,1956.
The author discussesthe importance of the familial level in the classification of the pelecypods.

Inland Mollusca of Northern Mexico III Polygyridae and Potadominae by Henry A. Pilsbry Proc. Acad,. of Nat. Sci. of Philadelphia, June 22,1956. pp 19-40, 3 plates. The work is done with the usual excellence of the authors efforts. A clear key to the species and the illustrations are first class.

The Types of Naiades (Mollusca: Unionidae) in the Museum of Comparative Zoology by Richard I. Johnson Bull.Mus.Comp.Zool.,Sept., 1956. pp 101-142 ,2 plates. -- The location of a type is not always an easy matter if not stated in the original description.

Notes on the Plant and Molluscan Ecology of a Saline Desert Area in Italian Somaliland including the description of a new species of Cleopatra (Mollusca) by C.F. Hemming and B. Verdcourt- Ext. de la Revue de Zoologie et de Botanique Africaines 14 April,1956.
Desert ecology is always of interest to many of us who must consider the fauna of the deserts of S.W. United States and Mexico.

A New Scaphopod Mollusk, Dentalium (Tesseracme) hancocki, from the Eastern Pacific. by William K. Emerson.. American Museum Novitates, No. 1787, Sept. 28,1956.

This West Mexican species will be of great interest to all of us having specimens of this family. Dr. Emerson gives a key to all species of the subgenus, data on the distribution both Recent and fossil,a seemingly complete bibliography of literature used, and a plate showing both the form and character of the shell but an inset showing the microscopic sculpture.

Upwelling and Associated Marine Life Along Pacific Baja California, Mexico by William K. Emerson, Journal of Paleontology, Vol.30, No.2, March,1956.

An interesting paper on an interesting subject. These cold water upwellings produce a littoral fauna comparable to that of a much more northerly latitude. The results are many rather fantastic ranges. A species known only to collectors from northern California will reappear on the coast of Lower California.

New Species of Land Snails of the Genus Partula from Raiatea, Society Islands by Henry E. Crampton. American Museum Novitates, No. 1781, March 8,1956. pp 1-17, 2 plates.

Interesting shells but in my experience a problem for the specialist, or one disposed to devote a great deal of study to the many puzzling variations. The authors work in this group has been outstanding.

Molluschi del porto di Catania by Dott. Ing. Ottavio Priolo East. dagli Atti della Societe Toscana di Scienze Naturali Pisa, 1956. 5pp 1 pl.

A list of species is always interesting and especially as here where I see several with which I am not familiar.

Proceedings of the Malacological Society of London, Vol. 32, parts 1 and 2, 31 August,1956.

Some Tertiary Pectinacea From East Africa,Persia, and the Mediterranean Region by F.E. Eames, and L.R. Cox 11 1-68, 20 plates.

Notes on the Snails of North East Tanganyika Territory 7. The variation of Gulella conradti (Von Marts.) and the description of Gulella intrusa, a closely allied new species by Bernard Verdcourt pp 69-71, 1 pl.

Notes on some land and freshwater Mollusca from Ethiopia and Somalia (including some records from Kenya) by Bernard Verdcourt.

A new genus of Mesozoic Pleurotomariidae by L.R. Cox.

Proceedings of the Philadelphia Shell Club Volume 1, Number 1 (1955-1956) issued Sept.,1956.

This is a very imposing start for the new publication, and may it continue to become better and larger. 26 pages, neatly mimeographed, sewed and backed with cloth between heavy 24 lb. pink binders with the name printed on the cover.

Shell Clubs in America by R. Tucker Abbott. The history and date of organization of the various clubs is of real interest.

Shell Collecting in the Palau Islands by George F. Kline- An interesting account of the visit of the Gloria Maris expedition.
*** Note by JQB- Better pick somewhere else to go in your own yacht. 4,000 lots and 200,000 specimens should pretty well sample this one. Other good papers by Virginia Orr and John Dyas Parker.

Ted Dranga- We were shocked and grieved to hear of the death of Ted Dranga on a British island off the east coast of Africa. He was buried there. Mrs. Dranga was notified of his death from Washington. Few men have collected as many fine shells from as many far away places as Ted Dranga. Whenever a group of old time shell hunters get together, one or more of the almost fabulous collecting exploits of Ted will be told again, and even if we have heard it before we always listen with interest. Many of his experiences in search of rare shells would merit a place among those of the great adventurers and soldiers of fortune.

The last letter I had from Ted was last spring, and he then planned to come out to the A.M.U. meeting at San Diego. No doubt his fatal African trip cancelled those plans.

Ted knew fine shells. He knew shells. When he returned from a trip he brought no common or poor shells, only the best. I have had many shipments of shells from Ted and have never seen a poor specimen in the lot. The Readers Digest carries a series called " The Most Unforgettable Character I've Met." This is the way I will always feel about Ted Dranga. J.Q.B.

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SYNONYMY

It seems to be very unfair at times to find that the accepted name of a species was published in a sale catalogue or other work of little value but placing as a homonym in the synonymy the scholarly work of a later writer. To read anything worth while about a host of species it is necessary to study the work of authors found in the synonymy. This is not a suggestion to abandon the rule of priority, but there should be some way of giving a little credit to the serious scholar whose nomenclature has been destroyed by the discovery of some unknown antiquarian list. J.Q.B.

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A New West Mexican Prosobranch Mollusk Parasitic on Echinoids by S. Stillman Berry. The American Midland Naturalist, Vol. 56, No.2, Oct.1956.

Turveria Berry,1956 is a new genus described - named for Mr. Harry Turver, one of our most successful collectors.

The new species is Turveria encopendema Berry. There are two figures, one showing the host, the well known Encope grandis A. Agassiz with the new species ectoparasitic on it. The other figure shows the characters of the shell clearly. Dr. Berry discusses the taxonomy in some detail.

****

ANYONE SEE A 15-FT. SNAIL ? An amusing story in the L.A. Times of Oct.7,1956. It seems one of the Hollywood film companies were making a picture for the Science Fiction fans, and had a rubber snail 9 foot high and 15 foot long on the All American canal in the Imperial Valley. Anyway the cable broke and the huge rubber snail escaped. It might be quite a shock to have such a thing sail down the canal at you. Might make a story to rival the flying saucers.

****

Glenn R, Webb, Dept. of Biology, Henderson State Teachers College, Arkadelphia, Ark. We have a letter from Glen dated Nov. 16,1956. He is now teaching, and is also the proud father of a son born Nov.2nd.

Japanese Claims 70 K Pearl Find- An article in the Los Angeles Herald and Express. Aug. 17. 70 carats is 5 more than the largest known to exist. It came from the Arafura Sea.

Haliotis pustulata by Robert Talmadge

This type pf shell ranges from Mozambique, north through madagascar, Zanzibar,Kenya,Ceylon,Southern India and Mauritius. A rather pure greenish phase appears to have been the basis for the name ancil of Reeve and a rather smooth specimen may have been the form that Mabille used for his jousseaumi. The type specimens are not available, so descriptions and figures are the only comparison on which to base these thoughts.

From Kenya north into the Red Sea, the species alters. The shell becomes deeper, the tubercles are lost, and the coloration changes from the usual grey to a rust,red, and cream. The tubercles may or may not be present. Reeve's cruenta beyond doubt was based on such material. As yet the writer has been unable to locate series that are large enough to show whether this is a population type or only a higher percentage of change from the normal shell. The animals are identical. The H. scutulum Reeve, although having the same animal, has some distinct shell differences. The right side is more curved and the shell is deeper. It is also much larger, but retains the thin, fragile texture, the usual small round perforations, and the rim around the interior of the spire cavity. The coloration is more concolored, being a dull green or brown , with dark and light maculations. Such specimens turn up in large lots of the H. varia from Zamboanga,Java, and Sumatra. As most of these specimens are collected by natives for commercial dealers in the region, it is impossible to obtain accurate locality data. That they are found with the H. varia is assumed, as they arrive mixed with the more common species. One feature that does not fit in with the thought of a subspecies is that so far no intermediate specimens have been found. In the case of the cruenta (if it is a valid subspecies) intermediate and mixed specimens turn up from different areas. However, in the case of the H. scutulum no such mixed or intermediate material has been available. However, as the eastern coast of India is not suitable for Haliotidae, this may represent a geological separation in the not too distant past. Flemming's H. powelli (Pliocene) from New Zealand represents a similar type shell, and as the H. crebisculpta Sowerby, H. howensis Iredale, H. exigua Dunker and even the H. cocoradiata Reeve have somewhat similar shell features, and it may be possible that such a change separated not only subspecies but species as well.

Recently the writer received a series of the Indian Ocean Haliotis (Sanhaliotis) pustulata Reeve that contained the anatomy as well as the shell. This was the first lot from east Africa with the anatomy and furnished the chance to compare the anatomy of specimens from this region with those of the Red Sea and the islands of Indonesia. As this species is not too common in American collections, and as there are a number of named species in this group, referable to the H. pustulata, the writer thought that perhaps a short review would be of interest to other malacologists.

The anatomy of all races of the Haliotis pustulata is so similar that for practical purposes, it may be considered identical. The epipode is both longer and wider than any of the Pacific Coast species, compared to the pedal. The olfactory tentacles and eye stalks are much more pronounced. The radula, although similar, has a much more stongly curved first lateral than any of the other species examined. Unfortunately, there is so much variation between individuals that this is not considered to be too accurate in this genus.

Reeve, in Conchologica Iconica,1846, described the basic species and a number of other named species from the Hugh Cumming collectio.

Population comparisons now indicate that these named species are either geographical races, or else pertain to some color or local phase that is not consistent. The range as a whole extends along the east African coast from Mozambique north into the Red Sea, and east into the islands of Indonesia and the southern Philippines. There are certain shell differences, but over the whole, the animal parts remain rather identical.

The typical H. pustulata is a small species. Dorsally, the shell is somewhat flat, the cords are flat, and there are low pustules or nodes. The right side is straight or nearly so, the perforations small and round, numbering from six to eight. The spire is distinct and somewhat elevated. The shell is thin, and around the cavity of the spire there is a strong rib. Some specimens lack the tubercles, and others have a trace of lamellae. In an unsorted lot, one will find all of these features. The basic coloration is grey, maculated with dark green or brown.

****

MINUTES OF THE CONCHOLOGICAL CLUB* Nov. 6,1956

The regular meeting of the Conchological Club was called to order Tuesday evening, Nov. 6th at 7:30 P.M. by President Mr. John Fitch. The minutes were read and approved. Our treasurer, Mrs. Donal Brooks recently returned from a trip to the Atlantic coast and Florida. While collecting was not too successful due to some bad weather, she brought a generous sample of what can be found on Sanibel Island.

Mr. John Fitch reminded us of the field trip Saturday, Dec. 1st to San Mateo Pt. Just remember to stop at the military base and get a pass from the M.P. to go onto the beach to collect shells. There will be further reports and discussion on the Dec. 28th to 31st trip to San Felipe at the Christmas meeting.

The nominating committee will report at the December meeting. Mrs. John Q. Burch has graciously offered her home for our annual Christmas party. Mrs. Jeanne Cate, Mrs. Bessie Faulkner, Mrs. Maddox, Mrs. Grafton, and Mrs. Thurlow will form a refreshment committee for that occasion. Mr. Chace reported briefly on the unusual erosion of abalone shells taken on the seldom visited San Nicolas Id. off our coast (now a military reservation). Mr. John Q. Burch, reporting on recent pertinent publications of interest pointed out the fact that our " Minutes" continue to offer worthwhile information and are circulated among shell collectors all over the world.

Just before our mid-meeeting break, four guests were introduced by Mrs. Burch, and a drawing held for the door prize.

After our intermission, Mr. Gilbery Grau discussed the family Pectinidae showing many specimens. Following a great deal of research including a recent study of the wealth of material collected by the U.S.C. Hancock Foundation (revealing incidentally , 5 new species) Mr. Grau's work will be published soon in book form by the Hancock Foundation.

Meeting adjourned.

Respectfully submitted,
Miss Florence Thurlow, Secretary

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Laughterus systematicus By J.Q.B.

George Gaylord Simpson in " The Principles of Classification and a Classification of Mammals", Am. Mus. Nat. Hist.,1945, stated the current issue neatly as follows: " Splitters make very small units- their opponents say that if they can tell two animals apart, they place them in different genera, and if they cannot tell them apart, they place them in different species. Lumpers make large units- their opponents say that if a carnivore is neither a dog nor a bear they call it a cat."

If my poor comments should ever come to the attention of the learned author whose book I am reading this evening, I trust that he will forgive me for having said of some of his other books that they were a bit abstruse. Without consulting Webster I think abstruse is a good word. In any event I meant that those of us who are not professional scholars and boast of no more scientific acumen than the man on the street, may well have to read a page over several times before noting a glimmer of light. However, Dr. Simpson has a delightful sense of humor, and may impress a nice point of logic upon the readers mind by giving him a chuckle as he reads.

It is not entirely fair to an author to merely quote an occasional line, and if quoted out of context may at times be misleading. Nevertheless, with the book before me I will mention certain stetements that are in my opinion apropos.

" The particular classification that is to be used depends, first of all, on historical factors. It is possible, as some modern writers have shown, to invent a syntactic system and a vocabulary that more efficiently express the emotions of a particular individual than does orthodox English, but if language is to be used as a general medium of communication such experiments are not particularly helpful. Similarly almost any student of zoology might invent for the particular animals with which he is concerned a wholly new classification that would serve his individual purposes better than the orthodox system. Classification, however, like speech, is a means of communication and it requires a consensus and a certain degree of historical continuity in order to function. Good classification is conservative..." p. 13

" It is in the superspecific categories that splitting now most requires attention and correctives. In theory it is possible to say that the number of animal species is fixed and objective, or nearly so,but the number of higher units is subject to no limitations other than that they cannot, at any one level , be more numerous than the species. What is deplorable is the tendency to raise the ranks of groups without need, that is, without gaining any practical advantage. One of the more evident symptoms of this tendency is the appearance of many monotypic units in classification. If a classifier makes mostly monotypic families, genera etc., it is a fair statement that he is giving family rank to what should be called genera,generic rank to species etc...."

" Specialists on particular groups almost always have a tendency to exaggerate ranks within their specialty,unless this is consciously perceived and corrected. They see differences more clearly, and their main occupation is likely to be analysis. Having special knowledge, the multiplicity of names is more helpful than difficult for them within a given field, and they do not always appreciate the great inconvenience experienced by the more general student to whom this field is only one of many." ..." In this last respect, the subgenus is perhaps the most notably neglected rank. When students recognize a definable group within what has been called

a genus, they too often propose calling the group a separate genus when it could perfectly well and far more conveniently be called a subgenus if it really needs formal designation within the hierachy" pp 23-24

The author opens his chapter on nomenclature with the following clear statement." Many biologists and even some taxonomists seem to feel rather pride than shame in their ignorance of the principles of zoological nomenclature. The same men would be quick to condemn a solecism in the use of their native languages, and nomenclature is the grammar and vocabulary of zoology. Neither nomenclature nor grammar is an end in itself, but they are not less important on that account. The comparison can be extended to point out that litterate men do make mistakes in grammar and litterate zoologists do make mistakes in nomenclature, but that only dolts see in this an excuse for illiteracy."

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A few days ago one of our enthusiastic amateurs was telling me about his recent collecting trip, and he had taken the entire pail full of his catch to one of our active describers. I suggested " All new species? " " No", he said, " Only five of them, BUT they are all type species of new genera making ten names in all". I then commented " What a pity you didn't turn over another rock and get five more." J.Q.B.

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A new publication came to my desk recently, Bulletin of the Biogeographical Society of Japan, Vols. 16-19 Dr. Yaichiro Okada's Jubilee Numbers, 1955. This is a large volume of 432 pages and illustrated with numerous plates and text figures, Apparently the entire fauna is represented but there are six paper on Mollusca. Several will require careful study to fully appreciate the work done. Some will be discussed in later issues of these Minutes.

1. I. Taki: Qualitative and Quantative Considerations of Chiton Fauna of Japanese Islands.

This paper is of great interest to us and similar papers on other groups would be welcome. The author compares the fauna of Japan with those of the Pacific and the Indo-Pacific. The result is interesting in that 27 genera are recognized from the Pacific Coast of North America, 60 genera from the Indo-Pacific region, and 31 genera inclusive of subgenera and sections around the Japanese islands. 14 genera are common to the 2 shores of Japan and North America. The author estimates that 43.5% of the Japanese seas may be considered as influenced by the cold current. Among the common genera are Oldroydia, Tonicella, Mopalia, Placiphorella, Cryptochiton, Lepidozona, Callistochiton and Stenoplax. 9 species of chitons are common to the Japanese seas and the North American shores.

A List of the Cephalaspid Opisthobranchia of Japan by Tadashige Habe.

An annotated check list with the descriptions of numerous new species.

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